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THE ORCHID REVIEW

An Illustrated Monthly Journal

OF ORCHIDOLOGY

EDITED BY GURNEY WILSON, F.L.S.

VOLUME XXIX

1921

B.37

Richmond

ORCHID REVIEW, LTD., 70 SHEEN ROAD

London Agents:

MARSHALL BROTHERS, LTD., 24-25 PATERNOSTER ROW E.C. 4

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THE ORCHID REVIEW.

VOL. XXIX.] JULY, 1921. [No. 337.

NOTES.

THE ORCHID REVIEW.—Owing to the sad loss sustained by the death of Mr. R. A. Rolfe, the "Orchid Review" has been suspended for the period of six months. The present issue forms the first part of the twenty-ninth volume; further numbers will be published on the first of each month.

DISTINGUISHED VISITOR.—Prince Tadashige Shimadzu, who has been invited by the Council of the Royal Horticultural Society to be a member of the Orchid Committee during the current year, attended the Society's Meeting on May 10th, and subsequently visited the extensive collection of Sir Jeremiah Colman, Bart., at Gatton Park, Surrey. The Prince, who is a member of the Imperial Orchid Society of Japan, possesses an extensive knowledge, not only of the plants indigenous of his own land, but of those cultivated in other countries, and is, in addition, widely acquainted with Orchid literature.

ROEBLING ORCHID COLLECTION.—Mr. Eugene Dixon, Ogontz Farm, Elkins Park, Pa., U.S.A., who, in 1919, purchased the whole of the Orchid collection formed by the late Mr. Chas. G. Roebling at Trenton, New Jersey, has recently removed the plants to the above locality, where a range of six houses, each 100 feet in length, and complete in every detail for modern cultivation, has been erected. Mr. James Goodier, who has long had charge of this collection informs us that the plants are in every way better for the change.

ONCIDIUM PAPILIO CHARLESWORTHII.—One of the surprises at the Chelsea Show this year was a new variety of Oncidium Papilio exhibited by Messrs. Charlesworth & Co. Although by no means white, it belongs to what is generally known as the albino class, for the heavy blotching of brownish-red has changed to light orange-yellow. The curious point is that several plants were exhibited, each differing slightly in degree of coloration, which throws a little doubt on their true albino nature. Even in the variety most devoid of the typical blotching, the two cirri of the column

wings bore blackish glands. The future flowering of these plants will be a matter of much interest. The typical form of O. Papilio has always been peculiarly attractive. In the early days of its history, Dr. Lindley stated: "The name has doubtless been suggested by the brilliant colours of the flower, its singular form, which may be easily likened to the wings, body, antennæ, and tongue of a butterfly, and its fluttering motion when hanging from its stalk, at the extremity of the weak, elastic, jointed scape."

DENDROBIUM DALHOUSIEANUM LUTEUM.—This variety is rendered distinct by its clear straw-yellow colour, although the two mauve-purple blotches on the lip are still in evidence. Major-General E. S. Berkeley, who had collected about two thousand plants of this species and flowered them all in India, considered this plant to be the only distinct variety worthy of being brought to England. Although found some thirty years ago, it was not until Lieut.-Col. Sir George Holford exhibited it at the International Show of 1912, that it received a First-class Certificate. At this year's Chelsea Show, well-flowered specimens were included in Sir Jeremiah Colman's Gold Medal Group. The sepals and petals of the variety luteum are said to be of thicker texture than those of the normal type.

NOMENCLATURE.—The creating of new names that denote the parentage of hybrids has oftentimes much in its favour, as for example, Odontoglossum crispodinei (crispum × Coradinei), but there are occasions when careless union of the parental names make confusion worse confounded. At the recent Chelsea show a very fine variety of Odontoglossum crispo-Solon caused more than one member of the Orchid Committee to seriously confuse it with Odontoglossum crispum solum. Now solum is a well-known Latin adjective signifying "alone," or "only," and in this case is used to describe a very distinct variety—the only one of its kind. But Solon was an Athenian legislator whose name is used for the hybrid between O. Adrianæ and O. ardentissimum. The result is that O. crispo-Solon is half Latin and half Greek; it commences with a small letter and has a capital one in the middle; it is most likely to be confused with O. crispum solum; and finally, it is not in accordance with the rules of Horticultural Nomenclature, which aim at fixity of names by "avoiding or discouraging the employment of forms or names which are liable to produce errors or uncertainties, or to bring about confusion." Although the exhibitors Messrs. J. & A. McBean, were not in this case responsible for the name, they certainly staged one of the finest Orchids in the Show. The plant was awarded a First-class Certificate and a Silver Lindley Medal for "Good and Scientific Cultivation."

ORCHIS MACULATA ALBA.—Mr. E. Cooper, the well-known representative of Messrs. Sanders, when in the vicinity of Salisbury, noticed many fine examples of Orchis maculata growing along the road-side for a distance of about half a mile. Not only were there several unusually dark forms, but the pure-white variety was represented by a large number of specimens. As conspicuous colours assist in attracting insects to visit the flowers, and thus bring about fertilisation, it would be a matter of interest to follow up the future of this albino colony and ascertain if the deficiency of pigment results in the extinction of this variety by failing to attract the insects.

IRREGULAR PELORIA.—A very unusual deviation from the normal type of Odontoglossum crispum has recently flowered with Messrs. Charlesworth & Co. Regular Peloria is said to occur when the labellum reverts to the form of a petal, and thus makes the three segments of the inner whorl identical. In other words, the petals all resemble the three petals, although somewhat broader. But with the flower in question something much more interesting has occurred, for instead of the labellum copying the flat petals, the two petals have actually taken the form of additional lips. Thus the inner whorl consists of three irregular segments, giving rise to the term "irregular peloria." The well-known yellow crest on the base of the labellum is strongly reproduced on all the three inner segments, producing a star-like effect. When only one petal becomes so modified the condition is termed incomplete, and in examples, as the present, with both petals so affected, the correct definition is complete irregular peloria. It is worthy of note that the above variation is constant, the plant known as O. crispum Queen Maud having produced spikes of similar flowers for several successive seasons.

CHELSEA FLOWER SHOW.—A wonderful sight. One of the finest that has ever been. Such was the unanimous verdict of many thousands of horticultural enthusiasts who visited the great Chelsea Show of 1921. The King and Queen, accompanied by Princess Mary, the Duke of York, and the Duke of Connaught, arrived early on the opening day, and were attended by Lord Lambourne and Sir George Holford. The Royal party spent much time inspecting the Orchids, which occupied a considerable portion of the largest tent. Not only did The King readily pick out the finest varieties, but he read off the somewhat cumbersome trigeneric names with a fluency that surprised the experts. One of the finest hybrids was named Prince Hirohito after the Crown Prince of Japan, and proved an object of special interest to the members of the Crown Prince's suite who also visited the Show. Those who were unable to attend this wonderful

exhibition may be interested to learn that the Orchid groups extended to a total of 500 feet in length, and measured six feet from back to front. To give anything like a complete report of all the plants would occupy more than a whole issue of this journal. Even the report which we give does not do full justice to so important an event. Never before have Orchids been so much admired. Their popularity is ever increasing.

CATTLEYA TRIANÆ.—From the Julius Roehrs Company, Rutherford, N.J., U.S.A., we have received a photograph of Cattleya Trianæ having on one spike the very remarkable number of eight fully developed flowers. When one considers the usual shyness of this species, and that it seldom yields more than a couple of flowers on a spike, the event is certainly noteworthy. An increase in the number of flowers in an inflorescence is often attributed to over luxuriant growth, but cultivators know only too well that a soft and sappy bulb, however large, does not produce flowers superior either in number or quality. C. Trianæ in England flowers soon after the dull days of winter, and even skilled cultivators are often unable to induce their plants to yield satisfactory results on this account. The state of New Jersey, U.S.A., no doubt enjoys a comparatively clearer and brighter winter atmosphere that considerably assists the formation of the flowers of this species. But even this favourable condition does not by any means account for so fine a result as an eight-flowered spike. Satisfactory results are almost entirely due to judicious treatment in the process of ripening the bulbs after completion of the season's growth.

SOPHROCATTLEYA SIR MERVYN BULLER.—When that magnificent hybrid Sophrocattleya Rex came upon the scene in March, 1916, one could not help thinking that the climax had been attained, and, yet, perfect in every way as it is, we have in Sc. Sir Mervyn Buller evidence that finality is still a long way off. How pleasing it is to look at this problem in that light, and one hopes we have a long road yet to travel. It is very certain we may continue to look for fresh beauties in the future, and conjure up in our minds undreamt of possibilities until we are lost in the midst of fancy. As showing the difficulties in describing the coloration the writer has read of no fewer than four different versions. When examining the flower a few days previous to its exhibition the colour of the sepals and petals conveyed the impression of a rich rose-pink, the lip bronze-red, very rich, and with the C. aurea base and radiating lines. The width of the flower being close on six inches. The flower as seen in the sunlight appeared to be overlaid with a purplish iridescence of indescribable beauty. Raised by Messrs. Armstrong & Brown, the parentage being Sc. Mrs. F. Wellesley × C. Empress Frederick.—H. A. FARMER.

THE LATE ROBERT ALLEN ROLFE.

THE news of the death of Robert Allen Rolfe must have come as a shock to all those interested in the family of the Orchidaceæ, whether their interest was purely scientific or of a practical or æsthetic kind, or, as

THE LATE MR. R. ALLEN ROLFE, A.L.S.

For the loan of the block, we are indebted to the Committee of the Kew Guild. The book shown is also appropriate, being the first volume of the *Orchid Review*.

is often the case, was derived from a combination of those view points. It was like the sudden disappearance of a good stand-by to which one got used in the course of time, and on whose readiness one looked almost as a matter of course. Although approaching the end of the proverbial span of life, he had not yet shown any flagging, and a fruitful future to be counted by many years seemed still to lie before him. That was certainly his own outlook, as it was the impression which his friends and colleagues derived from his healthy look, the vigour of his carriage and the undiminished zest which his special work held for him. When he fell ill everything pointed to a passing indisposition, and even when the symptons grew graver it seemed more a question how much longer he could be withheld from his usual sphere of activity than whether he would have to leave it altogether. It came differently. An insiduous malady had worked its way, and the final collapse came as we now know it had to come in the circumstances. For the readers and friends of this journal his passing away had a doubly serious significance. For was it not his own creation and almost his personification? For twenty-eight years it had lived through him a remarkably regular, sober and useful life, he the soul, the heart, and the main feeder of it. When his heart stood still, it seemed as if the life of this, his spoiled child, must come to an end too; but souls live on and they long for reincarnation. The soul that lived in Robert Allen Rolfe, and spoke year after year out of the leaves of this journal, is the same soul which revels in the study of the marvellous diversity and ingenuity of an organic structure, simple in its ground plan, but capable of endless modifications; feasts on the beauty of shapes and colours; is ever anew stimulated by the problem of wresting from nature the secret of the life of her children and bringing them to our homes to nurse them into asquiescence with their exile; and last, not least, has also a healthy appreciation for the material realities of human life. This soul will always be with us, and to cater for it is well worth the labour of a good man, as Robert Allen Rolfe was. He was essentially a self-made and self-taught man. He rose from the ranks. His luck took him to Kew. He climbed into a position of scientific standing by sheer industry and perseverance. Once more luck came to his aid. Joseph Dalton Hooker recognized the metal young Rolfe was made of. He encouraged him, and with his blessing he started on the way to the mastery he was to win in the field of "Orchidology." Again the sterling qualities of his character, a stubborn pertinacity, untiring devotion, accuracy and honesty, stood him in good stead. The Herbarium and its magnificent library were an inexhaustible mine for him, from which grew his academic knowledge, whilst the treasures of the Gardens kept him in constant and enlivening contact with the living material. On this twofold basis his authority as an expert was gradually built up. But this accounted only for a part of his activity. The official

claims on his time and labour lay often and for long periods in other directions, and loyal to his duties as he was he never shunned them. To make up for what he had to forego in that direction, he cultivated in whatever time was left to him with assiduity the friendship and goodwill of the large guild of Orchid growers that is scattered all over the country, and he repaid them with his expert knowledge with a liberality such as the enthusiast only metes out and can afford to mete out. Of this the pages of this journal are witness. They have spoken for twenty-eight years. Such men have never their true reward, rendered in the terms of commerce—he certainly had it not—and perhaps it is better so. He was happy as he was, although he sighed sometimes for more time and for more elbow room. Had he had it, and had it early, he might have risen still higher and freed himself from a certain timidity which only too often prevented him from coming to conclusions and was the cause of much unfinished work, it might also have led him from the purely and analytical and discriminative work in which he certainly excelled on to the constructive results of a higher order. He had never travelled, and it was pathetic to see how at the age of sixty-five he planned a journey which should make up for this gap in his education as a naturalist. How he looked forward to that trip to Panama, which should introduce him into one of the Eldorados of tropical vegetation and yield him new spoils, unvitiated by the press or hothouse. Alas! when will the time come when every herbarium worker will be required to serve a noviciate of serious fieldwork at home and in a foreign country?

Looking back over the many years during which I worked with him as my colleague and ultimately as his chief, there rises before me the figure of a man, absolutely upright and loyal, all devotion to his task, as he recognized it in the light of his intellect and his moral conceptions, not perhaps a master mind, but of broader and sounder views, and wider interests than he was sometimes credited with; thorough to occasional pedantry, somewhat angular, unelastic and difficult to convince, as self-taught and self-made men frequently are; always eager to do his very best, a man every inch worth the position he held and the esteem which was accorded to him by those who were immediately associated with him as well as those who had otherwise come into contact with him personally or through the medium of correspondence and literature.

Those who wish for a more detailed account of his life may with advantage turn to the obituary notice in the *Kew Bulletin*, No. 3, of this year (pp. 123-127). Here it may suffice to quote only the most important particulars.

Robert Allen Rolfe was born at Ruddington, near Nottingham, on May 12th, 1855. He came to Kew as a gardener in April, 1879, and was appointed an assistant iu the Herbarium on a competitive examination in

1880. He was to have retired in May last year, but was granted an extension of service for one year, which he, however, did not complete, as he died on April 13th of this year. He married in 1881 Miss Caroline Berkeley Thatcher, of Clifton and Cheddar, who survives him with three sons and one daughter. His publications extend over 40 years, beginning with a paper on oak galls in the "Entomologist" of 1881. He showed early a predilection for Orchidological work, a "Revision of the genus Phalænopsis," dating from 1886 (*Gardeners' Chronicle*, vol. xxvi.). He monographed the Orchidaceæ for the Flora of Tropical Africa and the Flora Capensis (excepting Brownleea and Disa). Very numerous articles and papers on Orchids appeared in the *Kew Bulletin*, the *Gardeners' Chronicle*, the Journal of the Linnean Society, in "Reichenbachia," "Lindenia," and various periodicals which need not be enumerated here. Of his share in the *Orchid Review* we have already spoken. Of other plant groups he elaborated the Myoporinaceæ and Selaginellaceæ for the African Floras, and did much valuable work in connection with the genera Rosa and Rubus, the Philippine Flora and certain questions affecting the Flora of the West Indies. He took a keen interest in the question of hybridisation, which plays so prominent a part in the cultivation of Orchids, and published in 1909, with C. C. Hurst, "The Orchid Stud Book," an enumeration of hybrid Orchids of artificial origin. Outward recognition of his work came to him through his election as an Associate of the Linnean Society in 1885 and as an Honorary Fellow and Member of the Scientific Committee of the Royal Horticultural Society in 1906, the Award of the Medal of L'Academie Internationale de Botanique, and that of the Gold Medal of the Veitch Memorial Trust Fund, and the Victoria Medal of the Royal Horticultural Society, both made shortly before his death. He was buried in Richmond Cemetery on April 18th. O. STAPF.

CATTLEYA LABIATA ALBA.—The earliest appearance of an albino form of Cattleya labiata is generally believed to have been the plant which flowered in the collection of M. G. Warocque, of Mariemont, Belgium, in January, 1891. Another flowered with Mr. M. Wells, Broomfield, Sale, and received a F.C.C., R.H.S., Dec. 13th, 1892. Both the above albinos flowered from the then re-introduction of the species, which previously had been rarely seen in cultivation. In a small and little-known Orchid Manual by Thomas Appleby, formerly manager of the Orchid department of Messrs. Henderson & Co., there is an illustration of a Cattleya growing on a block of wood and producing one flower, the only reference being "Cattleya labiata alba." As this manual was probably published about the year 1860, the plant depicted came from one of the older importations, and a much earlier date can, therefore, be attached to the first flowering of the albino form.

CEYLONESE ORCHIDS.

A RECENT issue of the Linnean Society's *Journal* (vol. xlv. p. 143) contains Notes on a Visit to Kunadiyaparawita Mountain, Ceylon, by Frederick Lewis, F.L.S., whose object is to draw attention to the influence upon plant distribution of very special environment. This mountain rises with great abruptness to an altitude of 5,186 feet above the sea, and is completely surrounded by high forest. The orchids discovered were Dendrobium heterocarpum, Wall., the Primrose Orchid, said to be not very scarce at the summit; Cœlogyne breviscapa. Lindl., endemic, growing at about 500 feet below the summit; Podochilus falcatus, Lindl., endemic, from the summit; and Saccolabium brevifolium, Lindl., endemic, common on the very summit.

No mention is made of temperature, which is regrettable, but during a short visit paid by the author to the valley on the west, in the evenings, between noon and 6 p.m., over 4, 5 and 6 inches of rain fell each afternoon, leaving the soil saturated with water, and the air completely vapour-laden from sunrise to 10 a.m., after which the rains fell afresh. "As might be expected," states Mr. Lewis, "the plants themselves, that form the vegetation on the summit of this remarkable mountain, are typically of the character comprehended as 'wet-zone flora.' Their method of reaching the summit, must probably have been along the narrow wedge of forest that connects the base with the top." And further, "the practical absence of animal life, birds or monkeys at the summit of this peak, renders it unsafe to assume that seeds could have been conveyed by their agency, nor can it be assumed, on examining the individual structure of the fruits and seeds of the plants collected at the summit, that the majority owe their presence to wind transport."

Mr. Lewis does not here allude specifically to Orchids, which of course, comprise only a fraction of the flora in question, but it is generally admitted that they are among the plants whose seeds are dispersed by wind transport.

VANDA MARGUERITE MARON.—This is believed to have been the first hybrid Vanda raised in Europe, the parents being V. teres and V. suavis. M. Ch. Maron exhibited it at the R.H.S., May 26th, 1903, when it received an Award of Merit. In a letter just received from W. van Deventer, Esq., The Hague, Holland, we learn that during twenty years residence in Java, he occupied his leisure time with the raising of hybrid Orchids, one of them being the above-named Vanda, with but the parentage reversed (suavis × teres). The plants were eleven years old when they flowed for the first time, and two of them have recently been brought to Europe.

SIR TREVOR LAWRENCE'S ORCHID PAINTINGS.

THE late Sir Trevor Lawrence, Bart., for many years President of the Royal Horticultural Society, and whose Orchid collection at Burford was one of the finest ever formed, possessed a highly interesting series of paintings of rare species and early-day hybrids. At the disposal by auction of the plants in May, 1916, these paintings were placed on view, and after a few had been removed by certain purchasers, the large number that remained were very kindly presented by Sir William Lawrence, Bart., to the present Editor of this journal, who fully appreciates their value.

Unlike the R. H. S., and other, series of paintings, the items in Sir Trevor's collection vary considerably as regards size. The largest measures 36 x 23 inches and represents a plant of Odontoglossum coronarium in full flower, while the smallest is about two inches square, and depicts a single flower of Vanda cœrulescens. The majority are fine examples of Mr. J. L. Macfarlane's exquisite work. Others are by Mr. J. Nugent Fitch, while the remainder are as yet undetermined.

Sir Trevor's desire was that something more than the actual flower should appear in his pictorial records. This wish is effectively carried out in the case of the larger paintings, for not only are the plants represented, but the position of the flower spike is also indicated. In Odontoglossum coronarium the many-flowered spike is shown appearing in erect style from one of several matured bulbs. In the rare Trevoria Chloris the plant bears a pendulous spike of four flowers, while in Odontoglossum prionopetalum the two coloured flowers show respectively front and back views, the remainder of the spike being drawn in outline only. Another point worthy of notice is the method of placing somewhat similar varieties on the same card, this proving useful in the case of Calanthe hybrids. One set thus executed depicts no less than eleven closely related varieties, and is dated 1887. Dendrobiums are similarly arranged. Another example of recording can be seen in two paintings by M. Hudelot of rare Zygopetalums, in which the nature of the foliage is also seen, while on the back of the cards pencil sketches depict the habit of the plant as well as the position of the flower spike.

No doubt these paintings were formerly kept in classified order, but in their removal and the considerable use made of them during the period of the three days' sale they became as thoroughly mixed as a recently shuffled pack of playing cards. It proved a comparatively easy matter to classify the pictures so far as size was concerned, and no difficulty was experienced regarding the various genera, but there were some, apparently those first

obtained, which had no further particulars attached than "Cypripedium hybrid," or "Seedling No. 3," etc. Of these, some have already been identified, and hope is entertained that in time all will be accounted for.

Among the paintings of Cypripedium hybrids there are four inscribed respectively "Seedling No. 1, 2, 3, 4." On first consideration there appeared little additional evidence to assist in the elucidation of the problem. The first helpful point appeared when it was discovered that all four paintings were executed on similar pieces of Bristol board. The second fact was the identity of the hand-written inscription under each flower. Thirdly, the similar style of the work proved that one artist only was concerned. On comparison with authenticated paintings by J. Nugent Fitch, there was no doubt that they were by his hand. These Cypripediums were unquestionably those of many years ago, and evidently resulted from primary, or nearly so, crosses of C. venustum. Looking through the lithographic reproductions of Nugent Fitch's work in the *Orchid Album*, it was found that C. Meirax (vol. ii. t. 95) was exactly similar to painting No. 1; C. chloroneurum (vol. i. t. 37) proved identical with painting No. 2; C. politum (vol. i. t. 36) was precisely the same as painting No. 3; while C. Williamsianum (vol. viii. t. 365) proved a reproduction of painting No. 4. Further, each of the descriptions accompanying the above plates states, "This hybrid was raised by Mr. Robert Warner." There is, therefore, no doubt whatever that these examples in Sir Trevor's collection are four of the earliest known paintings of Cypripedium hybrids, and that they represent four out of the first ten artificially raised hybrids of the genus, not counting three Selenipediums. As the forerunners of thousands that have since been painted they thus possess a historic interest that will increase as time goes on. In 1880, Reichenbach wrote of these hybrids, "History not known, probably in consequence of a lost pocket book."

There are three paintings of Cypripedium insigne that carry one back many years. The first is C. insigne punctatum violaceum, in which the dorsal has the green area so reduced as to leave several of the spots on white ground, where they appear as clear purple instead of purple-brown. This variety appeared in a small importation made by Messrs. Henderson in 1855, though it was not described until 1869, when a few plants were sold at five guineas each. Mr. B. S. Williams noted it in 1877, and a few years later stated that it is found in some collections as C. insigne Chantinii. The second painting shows this variety Chantinii, and it differs but little from the former, perhaps due to cultivation only. These paintings, which appear to have been executed about 1880, represent the first known variety of this popular species. The third Cypripedium shows the variety albo-marginatum, in which the dorsal sepal is entirely margined with white.

The year 1880 may be given as an approximate date. Mr. J. Nugent Fitch was evidently the artist in all the above examples.

Odontoglossums are well represented, and as a few of them have connections with Robert Warner history, they may take first consideration. O. crispum Warneri dates back to the R. H. S. Exhibition of 1869, and although a couple of paintings bear this name, neither flower exactly agrees with the original description. One is called Od. crispum Warneri superbum, an improved form, of rose tint with blotched sepals; the other is inscribed "Star-shaped Warneri," and shows a large flower with very narrow segments. Another flower, dated 1879, and called O. Alexandrae fastuosum, shows that O. luteopurpureum was one of its ancestors. There is also an unusually well-coloured variety of O. crispum called Marianæ, first flowered by R. Warner, and figured in the third volume of his Orchidaceous plants.

Mention may here be made of paintings of O. Edithæ, named after Warner's daughter, and easily detected as a natural hybrid between O. crispum and O. gloriosum; of O. Coradinei, one of the earliest known examples of the natural hybrid between O. crispum and O. Lindleyanum; and of O. Wilckeanum, dated 1880, and inscribed "No name, Reichenbach says a Monstrosity." Contemporary with the above is a "yellow crispum," the sepals and petals without any spotting, and proving that varieties of this kind were then highly esteemed, as indeed they are to an even greater extent at the present time.

Now we come to several large paintings measuring 18 by 23 inches. Among them is Odontoglossum prionopetalum, with a 16-flowered spike, only two of which are completed in colours, showing back and front views. This fine plant was briefly described in 1885, when hybrids were little understood; to-day we know it to be a natural cross between O. crispum and O. luteopurpureum, and thus a variety of O. Wilckeanum. Sir Trevor's painting is signed "Macfarlane, 1881," which dates the plant back several years before the first published description. Another large drawing depicts the natural hybrid O. Andersonianum (crispum × gloriosum), and there are smaller ones of the same cross marked O. hebraicum, in allusion to the hebraic-like markings on the segments.

A word may here be said regarding the largest painting, measuring 36 by 23 inches, showing Odontoglossum coronarium in full flower. The effect is certainly imposing, although in this particular instance there seems a doubt as to whether the plant's dimensions and beauty have not been slightly exaggerated. However, it is an early work bearing the signature, "J. L. Macfarlane, 1879." The painting of O. excellens Baroness Schröder, June, 1891, shows a hybrid between O. Lindleyanum and O. Pescatorei, and on that account makes it a variety of O. elegantius.

(To be continued.)

CULTURAL NOTES.

By H. G. ALEXANDER, Orchid Grower to Lt.-Col. Sir GEORGE HOLFORD, K.C.V.O., Westonbirt.

DURING the summer months considerable attention is necessary in the management of all warm-growing, sun-loving Orchids that enjoy the warm air and bright sunshine. Without plenty of these important agents, Cattleyas, Lælias, Dendrobiums, etc., cannot be kept in a healthy and free-flowering state. If grown in houses affording less light than the plants require, the growth is deceptive, and while for a time many may show increased development of the pseudo-bulbs and leaves, especially young seedlings nearing the flowering stage, the time usually comes when such exuberant growth exhausts itself, and sooner or later the plants gradually become debilitated. I do not suggest that these plants will bear full exposure to sunshine, but the aim should be to allow them all the light possible without risk of injury. When the leaves feel hot to the touch, then it is advisable to lower the blinds, and not before. Fresh air is as essential as light to the satisfactory cultivation of these plants, in fact, it is absolutely necessary where plenty of light is admitted, to prevent the foliage from becoming unduly hot; without it the plants cannot possibly acquire that solidity of tissue which is so essential to healthy specimens. Secondary growth and growths made out of season are often due to insufficient light and air. These plants delight in a high temperature by day, by sun heat, so long as moisture and air are abundant, but they dislike being shut up, especially at night, in a high temperature and stuffy atmosphere. It is far better for the house to be comfortably warm, with the air in active circulation, and not too heavily charged with moisture. The aim should be, at all times, a condition of atmosphere that is conducive to health and vigour.

WATERING.—There is no more important operation with Orchid culture than applying moisture to the plants; even the most experienced grower needs to be very careful when carrying out this work. With a clear air and bright sunshine, care must be taken that the moisture applied to the roots is adequate to the needs of the plants. During the summer months the terrestrial Orchids require proportionately more water at the roots than the epiphytal kinds. It is only by attaining the habit of close observation that a correct knowledge can be acquired of what quantity of water is needed by any Orchid, and especially during its season of growth. The plants may not appear to suffer from careless watering, but a time of reckoning will come, and this probably when it is too late to arrest the backward tendency. All Orchids that are not actively growing must not be allowed

to suffer from want of moisture at the roots, yet if the latter are treated to excess, they will be found in a decayed state at potting time, and the effects of loss of roots will be evident in the weak growths the following season. On dry, hot days, nearly all Orchids benefit from overhead spraying. For those plants that cannot endure heavy syringing a good hand-sprayer proves a very useful iustrument, and means less danger of the young growths being filled with water from the mist-like spray produced, if due care be taken with it.

INSECT PESTS.—At this season it is necessary to maintain a continual warfare against all destructive insects, as they multiply rapidly in hot, dry weather. A sharp look-out must be kept for red spider which attacks the undersides of the leaves of many warm-growing Orchids. Sponging, or dipping in some safe insecticide, is the best remedy. The most troublesome of all pests are black and yellow thrips: these, if once allowed to gain a foothold, are difficult to eradicate. Periodic mild fumigating by means of one of the vaporising compounds will help to keep these pests in check, or spraying the plants overhead with some safe insecticide. For a few days following either operation, particular attention should be paid to shading, as the foliage is liable to become damaged by strong sunlight after fumigating or dipping in insecticide.

CATTLEYAS.—The condition of the late spring-flowering members of this family that have flowered should be ascertained, and the operation of affording fresh rooting material to those that need it should be carried out ere the new roots and growths advance, thus avoiding injury to the plants. Healthy plants should be re-potted with as little root disturbance as possible, but any having decayed material about their roots should have all the old compost shaken from them, cutting all dead roots away and removing old and useless pseudo-bulbs. Frequent disturbance of these plants is harmful rather than good ; large specimens may be allowed to grow for two or four years without being disturbed, providing that when re-potting is necessary the work is done thoroughly. Good and ample drainage is very essential, especially in the case of large pots that are to accommodate strong rooting kinds, or extra large plants. The treatment of the roots is the same for all members of this family, they like a rough class of material, Osmunda or AI fibre, Polypodium fibre and sphagnum moss, with a good sprinkling of crushed crocks and charcoal, mixing the whole well together. In potting, the compost should be pressed firmly about the roots. Care must be taken in watering all newly-potted plants, and extra shade given to those specimens which have been broken up.

EPIDENDRUMS.—The strikingly handsome species E. prismatocarpum is a robust, free-flowering Orchid, remarkable for the lasting qualities of its flowers, and is an attractive plant at summer exhibitions. After the plants

have ceased to flower, re-potting, if necessary, should receive attention at once. A similar compost to that advised above should be used, and the pots, which are the best receptacles, must be well supplied with drainage so

LÆLIOCATTLEYA BEDOUIN, as cultivated by Mr. H. G. Alexander in the collection of Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt.

that the water can pass away freely. The rooting material should be made firm about the roots, and the bases of the pseudo-bulbs kept about on a level with the rim of the pot. Being a strictly evergreen plant the water supply must be regular so long as growth is active, and even when at rest water must not be withheld entirely. The plants should be accommodated

in the Cattleya, or similar, house. E. vitellinum majus is another very ornamental and easily-grown Orchid that usually flowers during the summer months. If kept in a shady position its flowers will last for a considerable time in perfection, but it is not wise to allow the spikes to remain too long on the plants, or the latter will not have sufficient time or strength to develop flowering bulbs for another season. The cultural requirements of this species are similar to E. prismatocarpum, but with a slightly cooler and moister atmosphere at all seasons. The plants delight in abundance of fresh air, and, being of dwarf habit, they may be grown in shallow pans suspended from the roof rafters close to the ventilators. E. radicans and its hybrids are beautiful scandent Orchids now flowering; it is astonishing the length of time the individual spikes continue in perfection. As the reed-like stems produce aerial roots freely, propagation is easily affected by removing a portion of the growth with roots attached; the present time being the most suitable for such work, or attending to any of the plants' requirements. Desirable specimens may be had by planting a number of stems together in well-drained pots and training the stems round neat stakes. Given an intermediate temperature, and a position where the plants receive plenty of light and air, their cultivation is easy. All through the summer, and while these plants are in full growth, they should be frequently syringed during bright weather, and afforded plenty of moisture at the roots and in the atmosphere.

THUNIAS.—As soon as these cease to flower or finish growing they should be removed to a house where they can have plenty of air and be exposed to full sunshine, so that the stems may ripen. Later on the plants may be stood outside, providing the weather is favourable. Continue to give water in abundance at the roots, and in order to keep the foliage free from insects, syringe the plants frequently until the leaves begin to fall.

CALANTHES.—These are now growing freely, and if the roots are numerous, have a firm hold of the compost, and cling to the sides of the pots, the plants should receive copious supplies of water. When thoroughly well-established weak liquid cow manure may be given at every alternate watering. When the bulbs are swelling freely, and new roots are appearing on the surface of the soil, a top-dressing of fresh turfy loam will be the means of adding luxuriance to the foliage and strength to the future flower spikes.

YORK GALA.—At the York Flora Fete and Gala, June 15th-17th, Messrs. Cypher & Sons won the Premier Award, and Sir John Scott, Darlington, received the 2nd prize for displays of Orchids. For a single Orchid Dr. F. Bedford was placed second, and first for 6 Orchids in the amateur class. J. Rowntree, Esq., Clifton Lodge, York, was also a prize winner.

ORCHID FUNGUS.

A SUBJECT of considerable importance to Orchid growers was the highly interesting exhibit by Messrs. Charlesworth & Co., at the recent Chelsea Show, of their Pure Culture System of raising Orchids. Probably no seeds present greater difficulties in the matter of germination than those of Orchids, and, although it has long been known that the best results are obtained when the seed is sown on the surface of the compost surrounding the parent plant, it was Bernard who first published the explanation.

Orchid seeds that are supplied only with moisture merely swell into little green globules as the result of osmotic action, and eventually die through apparent lack of sufficient nutriment. But if the seeds be supplied with the necessary fungus they develop normally and ultimately become organisms capable of leading an independent existence. Not so long ago it was thought that the entry of the fungus into the seed had little more than an exciting influence, much in the sense that touching the pendulum of a clock sets the mechanism therein in motion. But more recent investigation suggests that the fungus contributes, possibly in a symbiotic manner, to the food supply of the embryonic seedling. In support of this latter suggestion it has been found that soon after the minute hairs make their appearance on the roots, disorganisation of the fungus takes place in the cellular tissue of the seedling. In other words, as the young seedling progresses, the necessary nutriment is obtained through the collecting influence of the newly-formed root hairs, instead of by fungal infection of the corm.

The late Mr. Charlesworth was a keen investigator in this matter, and some of his microtome sections were on view in the Scientific Department of the Chelsea Show. Considerably enlarged photographs prepared from these sections included: (1) Tranverse section of the root of a British species of Habenaria, about ½ inch from the tip, with the fungus in the cortical cells. (2) Longitudinal section of Habenaria, showing the fungus in the cortical cells. (3) Fungus taken from root. (4) Same more highly magnified. (5) Whole seed of Cymbidium. The seeds are very small and are produced in enormous numbers, 850,000 were estimated in a single capsule of C. Tracyanum. (6) Section of seed of Cymbidium showing the little differentiation present—merely a slight difference in the size of the constituent cells. The seed of an Orchid does not contain an embryonic plant such as is almost universal in flowering plants. Further photographs showed that the fungus enters the larger cells, whereas the growing points become laid down at the opposite pole. (7) Seed of Odontoglossum sown seven days, stained and mounted whole. The mycelium of the fungus could be seen passing through the meshes of the

integument. (8) The same more highly magnified. (9) Section of same. The fungus could be seen within the cells of the seed. (10) Odontoglossum seedling ("corm") 2½ months old. The fungus remained restricted to the larger cells at the base. The closely packed cells above showed that rapid growth was taking place. This is the region of the growing point of the stem, which had already formed two leaves. (11) Further developed seedling showing advance in stem growth and the beginning of root formation. (12) Section of Vanda seedling showing the young root absorbing its way through the corm, but not entering the fungal zone. (13) Section of the base of an Odontoglossum seedling showing the root further developed and entering the soil. The young root was quite free from fungal infection until about ¼ inch long, when it became infected from the soil. (14) Cells of fungal zone of same, more highly magnified. (15) Longitudinal section of an aerial root of Epidendrum showing hyphae passing through the velamen, also fungus in cortical cells of root.

As the chance of the seed being infected by the necessary fungus is somewhat remote, Mr. Charlesworth worked out a method of "Pure Culture" based on Bernard's investigations. The essential point being that the fungus is grown in pure culture and afterwards used to infect the seed. Suitable nutritive material having been placed in glass flasks, the whole is thoroughly sterilised by steam heat. When cool, the fungus is introduced, and after a certain period has elapsed to enable it to permeate the whole surface the seed is sown by carefully shaking a small quantity into the prepared flask, the mouth of which is then filled with cotton wool, and a suitable temperature maintained during the process of development. When the seedlings arrive at a suitable size for handling, they are pricked off into small pots and pans. On account of their clean and healthy nature, seedlings raised on this principle make rapid progress, and reach the flowering stage at an earlier period of their life than if grown on the old style method. Messrs. Charlesworth also staged a series of seedling Orchids in various stages of development, fully proving the great advantages of the above method. It is satisfactory to know that the Council of the Royal Horticultural Society awarded a Silver-gilt Lindley Medal for their meritorious work.

ORCHID CATALOGUE.—Messrs. Flory & Black, Slough, have just issued a comprehensive catalogue of new and choice Orchids. There are about 1,000 items, and in many cases duplicate plants of similar size can be offered. Plants described as having a certain number of bulbs implies that all are leaved. The nomenclature adopted is that adhered to by the Royal Horticultural Society.

VANDA CŒRULEA.

By CHAS. POWER, BARRACKPORE, INDIA.

DURING my recent travels through the Khasia and Jynthia Hills, the home of our famous Vanda cœrulea, I was able to obtain much valuable information regarding this beautiful plant, especially concerning the natural conditions under which it exists. These hills would scarcely appeal to the ordinary traveller, the whole country, with the exception of a few fertile localities, being a vast wilderness. The undulating hills, stretching for miles on all sides, are covered with a thick, coarse grass, and dotted here and there with a few stunted oaks and clumps of pine trees on which the botanist would discover an occasional cluster of Cœlogynes, Erias, Cirrhopetalums and Bulbophyllums. Yet to the trained and experienced collector some of our most beautiful Orchids are within easy reach by leaving the beaten tracks. The few exceptions of fertile localities mentioned above are, as a rule, within the radius of the main rivers and streams, where no regular means of communication exist, and the aid of a guide is absolutely essential. It is only in these localities that Orchids of any value are to be found in quantity. Vanda cœrulea, however, may be seen growing in small numbers in or near villages adjacent to a reserved forest, as in the case at Nartiung, where these plants were at one time very plentiful, but owing to the depredations of collectors and the general indiscriminative manner in which Orchids were collected, it was only the timely action of the Shillong Government that really saved the extinction of this species, a fact that is highly appreciated here by the real lover of Orchids. It is satisfactory to know that no collector may now take away more than a dozen plants, and these only by special permission and on payment of a royalty of one rupee per plant. A very wise precaution.

VANDA CŒRULEA: BRINGING IN THE PLANTS.

For the information of those wishing to grow plants from this locality it is necessary to give the various altitudes, temperatures, rainfall, etc., which I have carefully noted. Vanda cœrulea is found at an altitude of 3,000 to 4,000 feet on the Khasia and Jynthia Hills, occupying the grassy portions,

where they grow abundantly on the small branches of stunted oaks, with very little, if any, foliage. They are exposed to the direct rays of the sun and other elements at all seasons. The larger and better specimens, however, are found in more favourable localities in the dense shade of the forest, usually bordering, or within the influence of, the rivers and streams. The temperature at this altitude ranges from 60 to 80 degrees, but during the rains rising about ten degrees higher. During the winter it is very much less, even hoar-frost is not absent. The rainfall on these hills may be roughly estimated at 200 inches annually, and, in consequence, the atmosphere is somewhat humid, yet there is an abundance of sunshine owing to the absence of fog and mist, which are common to the Himalayas only. The result is no stagnation of the air, and the branches of the trees, having no moss or lichen on them, remain dry nearly all day. Though the annual rainfall is so high, yet within not more than a radius of twenty miles the greatest rainfall in the world is recorded annually at Cherripoonjee, viz., 5-600 inches, or as much as 30 inches during 24 hours, and at an altitude of about 4,000 feet.

Having noted the conditions under which Vanda cœrulea grows in its native habitat, I have cultivated them at Barrackpore very successfully, though the temperature is higher and the atmospheric conditions different. There is no reason why these plants should not thrive in just as hardy a style in any of the tropical countries where the conditions are somewhat similar. The secret of growing Vanda cœrulea is plenty of sunshine at a temperature not exceeding 100 degrees, with a certain amount of humidity, which may be established by placing a layer of sphagnum moss about the roots, as much rain as the plants can get, and a good resting season after flowering, say from September to February, when the plants are naturally dormant. They may also be grown in shade if other conditions are favourable. This mode of cultivation would not apply to England or America, where, owing to the severity of the weather, treatment under glass is necessary.

VANDA CŒRULEA: OXEN LADEN WITH PLANTS.

It is questionable whether the plants of Vanda cœrulea from the Khasia

and Jynthia Hills compare favourably with those from the Shan States. From my own observation I find those from the latter by far the better plants, being larger in size, with a greater profusion of flowers; whereas, in the former, although the plants are smaller they are more robust, better travellers, and the inflorescence is of a more brilliant and lasting nature.

The characteristics of this Vanda, and the temperature in which it thrives, have all been recorded by such eminent botanists as Hooker and Roxburgh, and as there has been no geographical change since their visits, I can add but little to their observations, though I fail to understand why these authorities should have limited us to such meagre records of their observations. Perhaps it is that my own will here fill the gaps and be of benefit to the cultivators of this particular Orchid.

What impressed me most, as no reference to the fact has hitherto been recorded, was the distinction between the Vandas growing in the dense shady forests and those in the open on the stunted oaks, with little protection from the direct rays of the scorching sun. In the summer months, from March till June, at this altitude of 3,000 to 4,000 feet, the heat is very great, and yet these very same plants, similarly unprotected from the elements of winter are subject to frost, which though not so severe as at an equal altitude on the Himalayas, exists, nevertheless, in more or less severity, and is a menace to these hardy, though somewhat sensitive plants. These drawbacks undoubtedly account for the robust nature of the Vandas situated in open positions, although they are smaller than those found in the dense and shady depths of the woods, where they do not confine themselves to the oaks alone. My own personal observations induce me to believe that Vanda cœrulea is more at home in the thick and shady forests of Nartiung, for the plants are larger in every respect and produce finer panicles of bloom.

I have observed Vanda cœrulea growing on the trunks of trees with no less than 16 to 20 pairs of large, dark green, healthy leaves, as well as at the same time bearing at their base four to six smaller growths, and which, would, in the course of a few years, grow into large specimens clumps; whereas I have seldom seen a plant of this species growing in the open on stunted oaks with more than six to eight pairs of leaves, and these of a very dull yellowish colour at the time of flowering, denoting the severe strain thus placed upon their constitution. It is very seldom, if ever, that adventitious growths are seen upon the latter class of plants.

Nature appears to recognise the adverse circumstances these Vandas experience in their desolate position and compensates them with a greater degree of prolifity; the seedlings are much more numerous when exposure of the parent plant occurs. Comparatively, very few seedlings are observable in the shady localities, which points to the fact that it is the fully exposed

plants that are really the progenitors, for, influenced by the direct rays of the sun and other favourable conditions towards seed production, they cause seedlings to be produced in large quantities.

At Nartiung are some giant monoliths, the largest is 30 feet in height, with at least an additional 5 feet below ground, and having a width of 5 feet and a thickness of 2ft. 8ins. I mention them to indicate a place where Vanda cœrulea of the finest form grow undisturbed, being protected by a considerate government. The large overshading trees are more or less covered with epiphytes.

The other species of Orchids in this locality will be recorded at some future date. They will be more particularly of the terrestrial kind, which grow abundantly within the valleys bordering the rivers and streams of these hills. In conclusion, I may add that communication in the Khasia and Jynthia Hills is limited to practically one main road. The traveller in search of Orchids, to be successfull at all, is obliged to rough it along unbeaten tracks; he will have to provide everything beforehand in the shape of provisions, and very little is obtainable in this unhospitable land. Moreover, a guide is absolutely necessary throughout the journey, and one acquainted with the language advisable. I am greatly indebted to Mr. Shadwell for the kind assistance he afforded me.

LÆLIOCATTLEYA LADY MANNINGHAM BULLER.—This is another delightful hybrid raised by Messrs. Armstrong & Brown, the parentage being Lc. Thyone × Lc. luminosa. Its rich canary-yellow sepals and petals and intense purple lip, beautifully frilled, produce a flower of striking contrast, exquisite, one may safely say. This gem turned up quite unexpectedly among a quantity of other seedlings, no particular importance being attached to the plant. This fact emphasises once again the importance of growing on to the flowering stage as many seedlings as possible. Of course, it is almost an impossibility to grow up on to maturity the thousands of seedlings raised. However, the thought comes into one's mind: how many surprises have been lost by the destruction of the surplus youngsters? Perhaps the very thing the hybridist has been striving to produce. Looking down the long list of hybrids of recent years we find now and again plants of outstanding merit, milestones, as it were, of the procession, and this is surely one of them.—H. A. FARMER.

ORCHID CUPS.—The Council of the Royal Horticultural Society has accepted from the Orchid Trade two Challenge Cups, which will be offered for Orchids at the fortnightly meeting on November 1st, 1921, at which it is hoped to arrange a special display of Orchids.

NEW ORCHIDS.

THE following New Orchids, Decades xlviii-xlix, described by Mr. Rolfe, are published in the *Kew Bulletin*, 1921, No. 2. With a single exception they were collected by Sir Everard F. im Thurn, K.C.M.G., when Governor of Fiji, and High Commissioner of the Western Pacific. The majority are natives of the Fiji group, and chiefly of the Island of Viti Levu, but the collection contains plants obtained in the New Hebrides and Solomon Islands.

MICROSTYLIS IMTHURNII.—Foot of Mt. Victoria. Flowers vanilla-scented.

MICROSTYLIS RADICICOLA.—Nandarivatu, on mossy tree roots above ground in shady forest. This somewhat resembles M. platychila Reichb. f. in habit, but the stems are shorter and more swollen at the base, and there is a difference in the structure of the flowers.

MICROSTYLIS LATISEPALA.—Navai. A much larger plant than M. Schlechteri, Rolfe, but judging from the description, approaching it in floral structure. The leaf of M. latisepala is said to be purplish, and the flower purple.

MICROSTYLIS EVERARDII.—Navai. A rather small, lax-flowered species.

MICROSTYLIS LONGIFOLIA.—Common everywhere in Fiji in the forks of the Ivi trees. A fruiting specimen collected by Seemann at Motariki is quite similar in habit, but has longer scapes and leaves, and may be different. Reichenbach labelled it "Liparis non-determinable," but it has the short broad column of Microstylis.

LIPARIS VITIENSIS.—Vesari Swamp, in forest by side of Suva Navua Road.

DENDROBIUM EVERARDII.—Nandrau. Closely resembling the Samoan D. dactylodes, but differing markedly in the broad and far shorter floral segments. Flowers yellow.

DENDROBIUM MALAITENSE. — Solomon Islands. Flowers white, ephemeral and very easily detatched.

DENDROBIUM CALANIFORME.—Fiji. New Hebrides. Allied to the Tahitian D. crispatum, Swartz, with which it has been confused, but readily distinguished by its much longer leaves and the flowers double the size. Horne remarks: "Common at some places on trees overhanging the sea and salt water marshes. Flowers yellow."

DENDROBIUM VITIENSE.—Nandrau, in mounts Viti Levu. This species has much the general habit of D. agrostophyllum, F. Muell, to which it is apparently allied, but has far smaller flowers. The latter are described as purple.

GREAT CHELSEA FLOWER SHOW.

MEMBERS of the Orchid Committee present :—Sir Jeremiah Colman, Bart. (Chairman), Jas. O'Brien (hon. sec.), H. G. Alexander, A. Dye, S. Flory, Pantia Ralli, J. E. Shill, W. H. White, E. R. Ashton, W. H. Hatcher, Gurney Wilson, F. K. Sander, J. Cypher, S. Low, A. McBean, R. Brooman-White, W. Cobb, R. G. Thwaites, J. W. Potter, F. J. Hanbury, W. J. Kaye, T. Armstrong, J. T. Barker and Rev. J. Crombleholme.

FIRST-CLASS CERTIFICATES.

SOPHROLÆLIOCATTLEYA PRINCE HIROHITO (Slc. Marathon × Sl. Leda), from Messrs. Charlesworth & Co.—Generally regarded as the finest Orchid in the Show. The plant carried a spike of two flowers, each six inches in breadth, of model proportions, the petals very broad and the tubular labellum widened out in neat style. The sepals orange-yellow with an over-tint of rose, the petals rose-crimson, most effectively ranging in degree of tint, and covered with a delicate venation of crimson, the lip darker, reddish-purple, and apex of throat dark-yellow. Unquestionably the finest result yet produced through Sophronitis grandiflora, a small, scarlet-flowered species included in both sides of the parentage. Also awarded a Silver Lindley Medal for "Good and Scientific Cultivation."

ODONTOGLOSSUM CRISPO-SOLON VAR. CARMINETTA, from Messrs. J. & A. McBean.—A truly wonderful flower of immense size, produced by crossing O. crispum with O. Solon (Adrianæ × ardentissimum). The spike carried four flowers, each possessing segments of thick texture and grand form, the sepals and petals carrying immense blotches of reddish-purple, the labellum having a similarly coloured zone of colour near the crest.

BRASSOCATTLEYA MRS. J. LEEMANN (C. aurea × B. Digbyana), from Baron Bruno Schröder, The Dell Park, Englefield Green.—An unusually fine variety of lemon-yellow colour tinged with green, the large and prettily fringed labellum of more intense coloration, and the throat yellowish.

ODONTIODA MARION WORSLEY, from Messrs. Armstrong & Brown.—The spike of this grand hybrid was not fully developed, but the three flowers already opened proved it to be of extraordinary merit. The large petals of excellent formation and the whole flower of brilliant scarlet-red. Most attractive.

AWARDS OF MERIT.

ODONTOGLOSSUM CRISPUM ADA EVANS, from Messrs. J. & A. McBean.—A beautifully formed flower of wide dimensions, the sepals well blotched, the petals with an occasional spot of rose-purple. The spike carried four large blooms.

BRASSOLÆLIOCATTLEYA JUPITER VAR. NIPPON, from Messrs. Charles-

worth & Co.—An immense flower of rose-pink colour, the labellum showing strong evidence of the Brassavola parent.

MILTONIA PRINCE IMPERIAL (VENUS × HYEANA), from Messrs. Charlesworth & Co.—The plant carried a spike of three flowers having the sepals and petals light rose, heavily flushed with purple.

ODONTOGLOSSUM CRISPUM VICTOR NEWTON, from Messrs. Armstrong & Brown.—A heavily built flower with very broad segments of thick texture, and the column richly coloured.

ODONTOGLOSSUM ST. GEORGE VAR. ALBION, from H. T. Pitt, Esq., Stamford Hill.—A handsome hybrid between O. eximium and O. Alexandria, carrying a spike of seven rose-coloured flowers, heavily blotched with claret-purple.

ODONTIODA GRENADIER VAR. GLOW (Oda. Sanderæ × Oda. Chanticleer), from Messrs. Sander & Sons.—A fine result; the spike carried eight flowers with very broad segments of brilliant scarlet-red colour.

BRASSOLÆLIOCATTLEYA JUPITER VAR. ZEUS, from Messrs. Sander & Sons.—A model flower with well balanced segments of light rosy pink colour, the broadly expanded lip with darker markings.

LÆLIOCATTLEYA CHAMPION (Lc. Aphrodite × Lc. Gottoiana), from Messrs. Sander & Sons,—An attractive hybrid, the three flowers of rose-purple with the lip intense crimson-purple colour.

ONCIDIUM PAPILIO VAR. CHARLESWORTHII, from Messrs. Charlesworth & Co.—An interesting form that may be regarded as the albino of the species, the flowers bright yellow, showing traces of the darker colours seen in the normal type.

LÆLIOCATTLEYA IMPERATRIX REGINA. See below.

CULTURAL COMMENDATION.

To Mr. H. G. Alexander, Orchid grower to Lieut-Col. Sir George Holford, K.C.V.O., Westonbirt, for a magnificent plant of Læliocattleya Imperatrix Regina (C. Mendelli × Lc. Martinettii), each of the two finely matured leading bulbs carried a spike of six large flowers. A most attractive exhibit.

TRADE EXHIBITS.

Messrs. Charlesworth & Co., Haywards Heath, were awarded a Gold Medal for a magnificent group of choice varieties. The central area was rendered light and pleasing by numerous many-flowered spikes of the yellow Odontoglossums produced through O. crispum xanthotes and O. luteopurpureum Vuylstekeanum. A new type of Læliocattleya Fascinator was well represented, as also the pleasing Miltonia hybrids, of which mention may be made of Odontonia W. R. Fasey (Od. Louise × M. Venus), of deep rose tint, obscurely marked with dull purple; Odontonia Ceres (M. Bleuana × Od. Lawrenceanum), yellow with reddish brown markings; and Odontonia

Dora (M. Bleuana × Od. Dora), rose colour. A new hybrid was seen in Læliocattleya Circe var. Lemonara, carrying four flowers, canary-yellow, lip margined with rose-magenta; also in Wilsonara majalis (Oda. Chanticleer × On. corynephorum), segments scarlet, tipped with rose. In the background were stately plants of Vanda tricolor tenebrosa, Epidendrum arachnoglossum candidum, Cœlogyne burfordiensis, the curious Cypripedium Rothschildianum, and many hybrids of Lælia cinnabarina. In the foreground were Bulbophyllum nudescarpum, B. barbigerum, and other botanical novelties. Mention may be made of Miltonia Prince Imperial, with rose-purple segments; M. Our Princess (M. Charlesworthii × M. Lyoth), with an immense crimson blotch on the lip; and Odontioda Victoria (Bradshawiæ × Dusky Monarch).

Messrs. J. & A. McBean, Cooksbridge, Sussex, received a Gold Medal for an extensive group of exceedingly fine plants, among which were fine varieties of the pure-white Cattleya Cowaniæ, C. Julienne, with a four-flowered spike of rose-pink colour, grand plants of C. Schröderæ and C. Mendelii, as well as Miltonia Charlesworthii and fine examples of Cypripedium Lawrenceanum Hyeanum. An interesting plant was Odontoglossum Eugeni (cordatum × crispum), and so was Oncidium McBeanianum (superbiens × macranthum). There were many fine Odontoglossums, including O. Diamond, with broad petals, prettily fringed; O. eximium Leonora; some specially good varieties of O. crispo-Solon; and a reddish-copper coloured hybrid between O. amabile and O. Maillardianum. Other noteworthy plants were the cream-coloured Cœlogyne lentiginosa and fine forms of Brassocattleya Bianca.

Messrs. Armstrong & Brown, Tunbridge Wells, were awarded a Gold Medal for a well-arranged exhibit, in which were many superb plants. Odontoglossum crispum Snowdrift carried a spike of 28 flowers, Od. Doris had 32 flowers of primrose colour, and Od. elatior bore 20 blooms of reddish-chocolate tint. Cypripediums included C. callosum Sanderæ, C. Holdenii, C. Maudiæ, and a new albino between C. Curtisii Sanderæ and C. callosum Sanderæ. Many excellent Miltonias as well as fine Odontiodas added to the attractive nature of this group. Læliocattleya Aphrodite bore 14 large flowers, Brassocattleyas were in fine condition, and a good result was seen in the cross between Lc. Ernestii and C. Suzanne Hye de Crom, white with yellow lip. An interesting plant was Cypripedium barbatum Warneri, very dark; and a good specimen of the green-flowering Cœlogyne pandurata.

Messrs. Sanders, St. Albans, received a Silver-gilt Flora Medal for an extensive group of rare species and fine hybrids. Dendrobium Dalhousieanum luteum carried many-flowered spikes, and Cymbidium Miranda var. Golden Oriole (Alexanderi × Lowiograndiflorum) was equally effective. Cypripediums included specimen plants of C. Curtisii Sanderæ, as well as a

very dark variety of the same known as Sanders', and C. Lawrenceanum Linden's variety. There were many excellent Læliocattleyas, of which mention may be made of Lc. Champion, Lc. Fascinator, as well as Blc. Jupiter, a showy hybrid. Among the rarities were Stelis muscosa, Epidendrum radiatum, Eulophia Saundersiana, several fine examples of Saccolabium Blumei, Aërides virens, and Zygopetalum Perrenoudii.

Messrs. Stuart Low & Co., Jarvis Brook, Sussex, were awarded a Silver-gilt Flora Medal for a praiseworthy exhibit, including Cattleya Mossiæ var. Prince of Wales, with a five-flowered spike; C. Mossiæ Wageneri, and C. Mendelii var. Fascinator, with a spike of five white flowers, the lip tinged with pink. Læliocattleyas were well represented, the varieties included being Lc. luminosa aurea; Lc. Domos, very dark; and Lc. G. S. Ball, orange yellow. Several handsome Brassocattleyas showed to advantage, especially Bc. Queen of the Belgians. There were also fine plants of Phalænopses, the curious Cœlogyne pandurata, the scarce Oncidium pulchellum, as well as a numerous assortment of Cypripedium species and hybrids. A striking flower was seen in Brassolæliocattleya Everest, of a pleasing pinkish tinge.

Messrs. J. Cypher & Sons, Cheltenham, secured a Silver-gilt Banksian Medal for a group containing many scarce species as well as pleasing hybrids. Mention may be made of the interesting Oncidium Papilio, the ever-moving Bulbophyllum barbigerum, Anguloa Clowesii, and some fine varieties of Cypripedium bellatulum. Cypripediums were well staged, several albino varieties being included. Scarce Masdevallias and Oncidiums, some good examples of Odontoglossum cordatum, and Epidendrum gattonense with many-flowered spikes were also noticed. Brassocattleya Digbyano-Mendelii were in perfection, some bearing six large flowers, and there were healthy plants of Oncidium Papilio with their butterfly-like blooms.

Messrs. Flory & Black, Slough, obtained a Silver-gilt Banksian Medal for a well-arranged exhibit containing the handsome Cattleya Jaquenetta (Prince Edward × Mossiæ), C. Snowflake (Dusseldorfei Undine × labiata alba), with snow-white flowers, and C. Helen Langley, a fine albino flower. An excellent strain of Lc. Dominiana was seen to advantage, as also were some fine Miltonias, of which M. vexillaria Cobbiana was a specimen plant. Læliocattleya S. O. Stephenson (C. Empress Frederick × L. purpurata) bore three fine flowers, the lip richly coloured. Among other albinos could be seen Cypripedium callosum Sanderæ, the elegant Cattleya Mossiæ Wageneri, and C. Brenda, with snow-white flowers of excellent substance.

Messrs. Mansell & Hatcher, Ltd., Rawdon, Yorks, secured a silver Banksian Medal for a neat exhibit of exceptionally fine Læliocattleyas, the varieties of Lc. Fascinator being well staged. There was also a hybrid between Lc. Canhamiana and L. Pacavia with a rich ruby-crimson lip that

attracted considerable notice. Cattleya Olympus (Octave Doin × Warscewiczii), a model flower of rose-purple colour; the green Cœlogyne pandurata and the similarly coloured Cypripedium callosum Sanderæ occupied prominent positions. Renanthera Imschootiana added a mass of red and Miltonia Sanderæ as well as Blc. Jupiter added touches of beauty to this group. There were some excellent Odontoglossum species and many fine hybrids, both natural and garden raised.

Mr. Harry Dixon, Wandsworth Common, received a Silver Flora Medal for a pleasing exhibit containing Cattleya Mossiæ aurifera, well flowered plants of Dendrobium Thwaitesiæ, some bright yellow forms of Odontoglossum excellens, the handsome Cœlogyne pandurata, Maxillaria Sanderiana, and the pretty Cypripedium callosum Sanderæ. Læliocattleya Smilax, with orange-red flowers, as well as a fine lot of Lc. Aphrodite, occupied the centre of this group. A plant of interest was Masdevallia muscosa.

AMATEURS' GROUPS.

Sir Jeremiah Colman, Bart., Gatton Park, Reigate (gr. Mr. J. Collier), was awarded a Gold Medal for a superb exhibit containing a wealth of remarkable species and numerous hybrids. There were several specimens of the Philippine Dendrobium acuminatum, the best carrying three spikes with 21, 15, and 12 flowers respectively; also fine plants of D. illustre, with many-flowered racemes; and a graceful example of Platyclinis cornuta, with numerous spikes. Zygocolax Perrenoudii carried five deep blue flowers, while Cattleya Skinneri was represented by superb plants of Temple's variety. The pretty Brassodiacrium Colmanii, with white flowers, the lip minutely spotted; Eria pannea; Octomeria diaphana; and Cirrhopetalum Rothschildianum, the finest of the genus, were all of interest. A noteworthy plant was Eria ornata, with its singular spike of flowers and bracts of orange-red colour. Lycastes included macrophylla and Mary Gratrix, with seven fine flowers. Many very attractive Odontiodas, of which the best was O. Vuylsteke var. Lady Colman, and numerous Odontoglossums, both species and hybrids, assisted in completing this extensive and meritorious group.

Baron Bruno Schröder, The Dell Park, Englefield Green (gr. Mr. J. E. Shill) received a Gold Medal for a wonderful exhibit of Læliocattleyas; rarely have so many fine specimens been previously seen. Lc. Aphrodite was well represented, one plant having no less than 14 flowers. Others included Lc. Anaconda (Lc. Pallas × C. aurea), with a spike of five copper-coloured flowers; and Lc. Britannia. Cattleya Schröderæ var. The Baron is of recognised merit, as also is the handsome Odontoglossum King Arthur. Among the best Miltonias were the fine varieties of vexillaria known as Queen Alexandra and Lambeauiana, the latter with five white

flowers; also M. The Baroness, with six spikes of crimson-blotched flowers, and M. Charlesworthii. Odontoglossum crispum The Baroness had exceptionally broad petals, while the numerous hybrids attracted considerable notice. A Lindley Medal was also awarded for exceptionally good cultivation.

Pantia Ralli, Esq., Ashstead Park, Surrey (gr. Mr. S. Farnes), received a Silver-gilt Flora Medal for a very attractive group, in the centre of which was a fine example of Læliocattleya Excelsior var. The Globe, having two finely built flowers of rose tint, the central area of the petals flushed with rose purple, and the broad lip similarly coloured. Around it were fine specimens of Lc. Ganymede, very petty, with flesh-coloured flowers, the labellum bordered with rose-magenta. Cattleya Magali Sander, with snow-white flowers, the choice C. Mossiæ var. Sea Foam, and Odontonia brugensis were all well-flowered. Among the Odontoglossums were some fine forms of O. crispum, including many of the choice xanthotes varieties. Another notable plant was O. crispum Ronald.

J. J. Joicey, Esq., Witley, Surrey (gr. M. J. Mackay), was awarded the 50-guinea Silver Challenge Cup presented by the Trade Growers for competition amongst amateurs who do not employ more than three gardeners in their Orchid houses, including the head-gardener. This group contained excellent examples of Phalænopsis amabilis, the elegant Odontonia Maudiæ (M. Bleuana × O. Louise), white with rose-violet markings, Miltonia, vexillaria var. Goliath, M. Bleuana, and M. Princess Elizabeth having petals flushed with dark purple. The fine Cypripediums included Boltonii, Orion, Maudiæ and Snowflake. An attractive plant was Zygopetalum Perrenoudii, with a spike of four rich purple flowers, while Blc. Gilbertii var. The Hill, carried two immense flowers. Mention may also be made of Odontioda Blue Gown, with five bluish-tinted flowers, and Cypripedium Psyche var. Pekoe, very pretty with the ivy-white flower minutely spotted with crimson-purple.

Dr. Miguel Lacroze, Bryndir, Roehampton (gr. Mr. M. Taylor), received a Silver Flora Medal for a very pleasing group containing many choice varieties of the popular species, as well as Blc. Success, dark purple; Blc. Queen of the Belgians var. Bryndir, with two large white flowers, the lip purple; Cattleya Schroderæ var. Prince of Orange; Bc. Triune, large form; the pretty Dendrobium Dearei; Odontoglossum Boadicea, with lemon yellow markings; some dark varieties of Miltonia vexillaria; Cypripedium Maudiæ and well flowered plants of C. callosum Sanderæ.

E. R. Ashton, Esq., Broadlands, Tunbridge Wells (gr. Mr. H. Varnum) was awarded a Silver-gilt Banksian Medal for a well arranged exhibit in which were excellent Odontoglossums, including O. Ashtonii, with a spike of five bright amabile-like flowers; the pleasing Dendrobium chessingtonense;

Lc. Dominiana, richly coloured; Cattleya Mossiæ var. La Vierge; C. Mossiæ, var. Pintadeau; Miltonia Charlesworthii; and in the centre. a well-flowered plant of Odontoglossum naevium.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood), exhibited the handsome Odontoglossum crispum Pittianum; O. crispum Lucianii; O. crispum Magnum Bonum; O. crispo-solon and O. Antinous (Othello × excellens) with a spike of nine golden-yellow flowers.

G. Geale, Esq., Wandsworth, staged Blc. Triune, with two finely developed flowers of rose-pink colour, the lip having purple streaks in the centre.

De Barri Crawshay, Esq., Rosefield, Sevenoaks, exhibited Odontoglossum harvengtense, with a spike of seven flowers of excellent formation, heavily blotched with orange-brown.

ROYAL HORTICULTURAL SOCIETY.

June 7th, 1921.

Members of the Committee present:—Sir Jeremiah Colman, Bart. (in the Chair), Prince Tadashige Shimadzu, Messrs. Jas. O'Brien (hon. sec.) Gurney Wilson, C. H. Curtis, A. Dye, J. E. Shill, E. R. Ashton, W. J. Kaye, Pantia Ralli, F. J. Hanbury. C. J. Lucas, J. T. Barker, T. Armstrong and Fred. K. Sander.

First-class Certificate.

Læliocattleya Mrs. Willoughby Pemberton var. magnifica (Lc. Baroness Emma × Lc. eximia), from Baron Bruno Schröder, Englefield Green, Surrey.—This finely grown plant carried a spike of two very large flowers of model proportions, sepals and petals rose colour, the broad labellum crimson-purple, with yellow zone near the column.

Brassolæliocattleya Jupiter, from Messrs. Hassall & Co.—An immense flower, the broad petals rosy-mauve, the widely-expanded labellum richly marked with dark purple.

Awards of Merit.

Miltonia vexillaria Purple Emperor, from W. R. Fasey, Esq., The Oaks, Snaresbrook.—This small plant carried a spike of six flowers of an unusually dark rose colour.

Dendrobium Gatton Sunray (illustre × Dalhousieanum luteum), from Sir Jeremiah Colman, Bart., Gatton Park, Surrey.—This well-grown plant carried two spikes, having respectively 7 and 6 large fleshy flowers of straw-yellow colour, with crimson-purple blotches on the labellum.

Odontioda Dauntless Orchidhurst var. (Od. Armstrongiæ × Oda. Coronation), from Messrs. Armstrong & Brown.—This young plant carried a spike of three flowers, with broad segments, heavily blotched with lilac.

CULTURAL COMMENDATION.

To Messrs. J. & A. McBean, for Odontoglossum Queen Mary var. Arachne.—A robust plant carrying a full spike of 13 large flowers, heavily blotched with chocolate colour.

GROUPS.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood), received a Silver Flora Medal for an interesting exhibit containing the curious Nanodes Medusæ, Pholidota pallida, a dark variety of Cypripedium barbatum, good forms of C. glaucophyllum, the elegant Cattleya Mary Sander, Odontoglossum crispum Zenobia, the yellow-flowering Dendrobium chrysotoxum, and the scarce D. rhodopterygium.

Messrs. Charlesworth & Co. were awarded a Silver Medal for a fine group, in which were bright varieties of Lc. Aphrodite, the pure-white Lc. Benita, and Lc. Lady Miller, with bright orange-red flowers. Also Cœlogyne pandurata, with a spike of ten green flowers, Cypripedium Maudiæ, many fine Odontoglossums, and a good specimen of Cirrhopetalum multiflorum.

Messrs. Stuart Low & Co. received a Silver Flora Medal for some fine examples of Cattleya Mossiæ, including the variety Wageneri, Lc. Vesuvius, Lc. Aphrodite, of rich coloration, the handsome Cypripedium Schillianum, well-flowered Renanthera Imschootiana, and the scarce Vanda Roxburghii.

Messrs. Hassall & Co. obtained a Silver Flora Medal for some choice varieties of the new Blc. Jupiter, good forms of Lc. Canhamiana alba, Lc. Radiant, very dark purple lip, the choice Cattleya Ashtoniæ alba, the scarce C. intermedia var. Aquinii, and some fine examples of Miltonias.

Messrs. Sanders were awarded a Silver Banksian Medal for an exhibit containing the neat Promena citrina, the interesting Masdevallia meleagris, strong plants of Thunia Brymeriana, Cattleya Warneri, the pretty Lc. San Juan, some good Odontoglossums, and Pleurothallis latifolia.

Sir Jeremiah Colman, Bart. (gr. Mr. J. Collier), exhibited Odontoglossum Wilckeanum Colmanii, with brownish-yellow blotching, O. eximium Pride of Gatton, white, with large blotches, and a well-flowered Dendrobium illustre.

Pantia Ralli, Esq. (gr. Mr. S. Farnes), staged Odontoglossum majesticum, a well-blotched variety, and O. eximium, an interesting cross between two selected eximiums, the result being a round flower almost covered with claret-purple.

W. R. Fasey, Esq. (gr. Mr. Seymour), exhibited Miltonia Venus, a very pretty variety with light rose flowers, the labellum with lines of purple dots arranged on a lighter area, and a distinct yellow zone round the crest. Also Od. Dority, a promising seedling of Od. Doris.

A. J. Hollington, Esq. (gr. Mr. May), staged Lc. Martinetti var. King Christian; Lc. San Juan, with bright purple lip and similar colour on tips of petals; and Lælia tenebrosa Tuthill's var.

DISA TELIPOGONIS.—This is an extremely interesting and rare species, quite unlike any other species of South African Orchid known to me. Only three collections are known; the first, by Berg, a Cape Town apothecary and collector, in 1816; the second, by Dr. R. Schlechter in 1896; the third, by Miss H. M. L. Kensit in 1904. It was long one of the most eagerly sought for of Orchids in South Africa, being quite unknown save for Reichenbach's description, drawn solely from dried specimens. Great, therefore, was our pleasure when excellent living specimens were found sufficiently near to us so that a drawing could at once be made from the life. Miss Kensit re-discovered the plant during a violent rain-storm on the summit of Table Mountain. This small Orchid had been practically lost for seventy years, and I hope that its modest size and the quiet colour of its flowers may now save it from the extinction by ruthless flower-gatherers which has overtaken so many other flowers.—*H. Bolus, in Orchids of South Africa*, 1911.

DENDROBIUM SUAVISSIMUM.—Miss Julia A. Stuckey, of Unley Park, South Australia, asks "Why is this Dendrobe called 'suavissimum,' meaning sweetest, when it has almost no scent? A species with such a name should always have a little perfume. However, it is very charming." This species is always described as being sweet-scented, and we believe it is the general experience of European cultivators to find it so. It seems unlikely that the removal from its native country, Burmah, to South Australia would deprive it of this pleasing attraction. Have any of our readers noticed a similar occurrence?

THE GENUS ODONTOGLOSSUM.—This popular genus, containing over eighty species, extends from South Mexico along the Andes as far as Peru and Bolivia. It is nearly allied to Oncidium, from which, states Dr. Lindley, "It is chiefly distinguished by its column being long, and usually narrow at the base, or at all events not tumid there, and by the base of the lip being always parallel with the face of the column. No other difference has yet been observed, but it may be added that the lateral sepals are very rarely united. The two genera unite by Od. nævium, which is very like On. phymatochilum, and by Od. costatum and its allies, which run into the Oncidia michrochila. The crest is extremely variable in its composition, but it usually consists of a pair of parallel lamellæ, between which arise various tumours and plates, the centre one of which always really occupies the centre of the lip. In some instances, especially among the Trymenia, little or no trace is discoverable of that mode of arrangement."

THE ORCHID REVIEW.

VOL. XXIX] AUGUST, 1921. [No. 338.

NOTES.

ANGULOCASTE BIEVREANA.—Among the many plants of interest in Messrs. Sanders' group at the Holland House Show was Angulocaste Bievreana, which at first sight has the appearance of a new Anguloa. Its history dates back to 1895, when a flower of Anguloa Ruckeri was crossed with the pollen, it is said, of Lycaste Skinneri, but this seems doubtful, for the flower gives strong evidence of L. cruenta being the actual pollen parent. It was raised in the collection of the King of the Belgians by M. de Bievre, and flowered for the first time in July, 1903. The fragrant flowers are deep yellow, lightly spotted with red on the column and base of the lip and petals, and several are produced from the base of each new bulb.

CATTLEYA CULTURE.—I read with much interest the note on p. 4, concerning the cultivation of Cattleyas. A few years back, during the month of August, I saw a fine batch of C. Schröderæ that had evidently been grown in an exceedingly moist atmosphere at a high temperature. In fact, the bulbs were so large and soft that I very much wondered whether they would keep sound during the winter months. Whether the production of these large bulbs was the real intention of the cultivator I know not, but during the late summer months these plants were given by gradual degrees an abundance of light and air that would astonish many growers. In the course of a few weeks the bulbs became thoroughly well ripened and in many cases acquired a bronze-like tint. When the flowering season arrived in the early spring of the following year the amount and quality of the flowers was truly amazing. Some of the finest blooms I have seen rewarded the cultivator. I was there and then convinced for ever that judicious ripening of the bulbs in the autumn was the secret, and that this treatment should commence in time to allow the process to be completed before the sun lost too much of its power. However necessary this ripening process may be, there is one still more important, and that is the production in the first instance of a really large bulb worthy of being so ripened. There is still much truth in the old proverb: "First catch your hare, then cook him."—H.L.K.

ARUNDINA BAMBUSIFOLIA.—This plant is figured in the *Botanical Magazine*, t. 7284, with the remark: "Quite the most beautiful terrestrial Orchid of Northern India, and I know of no more attractive picture of its kind than a patch of grass-land in the Khasia Hills adorned with clumps of it in flower."

HORTUS BOISSIERIANUS.—M. Edmond Boissier, author of the important work "Flora Orientalis," made a wonderful collection of plants at Valleyres, Switzerland. At the time of his death in 1885, the collection of Orchids alone comprised no less than 122 genera, 772 species, and 62 distinct varieties. Masdevallia was represented by 69 species, Oncidium by 58, Dendrobium by 57, Cypripedium by 47, Odontoglossum by 47, and Cœlogyne by 21. An enumeration of them by MM. E. Autran and T. Durand was published in 1896.

CYMBIDIUM STAPELIOIDES.—Mr. Henry O. Forbes, when residing in the West Javan Hills, found this plant in flower at an altitude of 2,600 feet, and subsequently transplanted the specimen to a tree 1,000 feet lower down. "None of the flowers," he states (Jnr. Linn. Soc. xxi, 538), "which were expanded when I found it were fertilised, but one of the stems had a solitary capsule. For three weeks the plant remained in the condition in which it was found, its large and somewhat sombre flowers retaining their perfect freshness throughout. I fertilized four of its flowers with pollen from others on the neighbouring stems, and these alone bore fruit. A couple of months later a fine new spike appeared, but not one seed-capsule was produced. Insect life at the lower station seemed quite as abundant as at the higher. This Orchid possesses no nectary, and its odour, if not pleasant is not disagreeable."

ZYGOCOLAX VEITCHII.—One of the most interesting hybrids, either from the Botanical or Horticultural aspect, and obtained by crossing two species of two different genera, *Zygopetalum crinitum* and *Colax jugosus*. The seed was sown by Messrs. Veitch in September, 1882, and the first flowers produced in March, 1887. This plant is interesting as having been the principal subject of Mr. R. A. Rolfe's articles on a uniform plan of naming bigeneric hybrids. He followed Dr. M. T. Masters, who combined the elements of the two generic names of the plants concerned when he named the first artificial bigeneric hybrid on record, Philageria Veitchii, a cross between Lapageria rosea and Philesia buxifolia. Zygocolax Veitchii is also found as a natural hybrid, and specimens introduced from Brazil and flowered in the gardens of Sir Fredk. Wigan, Bart., closely resembled those of artificial origin.—*Hortus Veitchii.*

ORCHIDS IN JAPAN.

By PRINCE TADASHIGE SHIMADZU, Member of the IMPERIAL ORCHID SOCIETY OF JAPAN.

OWING to the fact that I have been so kindly entertained in England by the Chairman of the Orchid Committee of the Royal Horticultural Society (Sir Jeremiah Colman. Bart.), and by all the Members of the Committee, I feel that I must say a few words on Orchids in Japan, having been asked to do so by the Editor.

First of all, I want readers to realize that although Great Britain and Japan are both island Empires, and in many respects resemble each other, Japan is farther down in the South than Great Britain. I also want to point out that the latitude of Tokio is still lower than that of the Southern end of Sicily or Gibraltar, and yet we are not in the tropics.

Now I think it necessary to explain the atmospheric conditions of Japan. In summer we almost always have a fairly strong southerly wind carrying much damp and heat, and in winter we generally have a northerly wind, which is very dry, and brings with it the Siberian and Manchurian coldness. The temperature in summer very often rises over 95 degs. in the shade, and in winter frequently falls much below the freezing point. The chief point of difference in the climates of both Empires is that in Japan the summer is very damp, and the winter very dry, while in England the summer is fairly dry, and the winter rather wet. Consequently we treat our Orchids more or less in reverse ways—we keep the air more humid in winter, and try not to make the air too damp in summer.

Having explained the difference in our climates, I think readers will realise how difficult it would be for us to grow some of the cool Orchids that flourish very well in England. In fact, we find it extremely difficult to grow most of the Odontoglossums, Cochliodas, Odontiodas, Masdevallias, Disas, etc., but fortunately we can grow other cool-house Orchids. On the contrary, most of the East Indian Orchids, and some of the Mexican and South American ones, such as Cypripediums, Vandas, Phalænopses, Lælias, Cattleyas, Brassavolas, and their derived hybrids, grow very well in Japan. Moreover I must say that some plants do much better in Japan, such as Phalænopses and a few of the Vandas.

Generally speaking, we are fairly advanced in Orchid culture. We are hybridising many of the plants, both of the Old and New World. As is the case in England, one of the chief objects of Orchid cultivation in Japan is to get a new hybrid. Our Society has about 40 members, and we are trying all sorts of methods for germinating Orchid seeds. Some are experimenting with the fungus method, others sow the seeds on coarse cotton net, or on

the pots containing the mother plants, and the results exactly resemble those obtained in England.

Now out of my own experiences I should like to give particulars of some of our native plants, as well as those with which we are quite familiar :—

AËRIDES JAPONICUM.—A very dwarf plant, resembling some of the green leaved Phalænopses in its appearance. Flower creamy-white with purple markings on all segments, but purer in colour on the lip. Sweet scented. The approximate northern limit of distribution is latitude 32°-30′ N.

ANGRÆCUM FALCATUM, Lindl.—A dwarf plant which grows out of doors. Flowers 7-8 in number produced on a short raceme of about 2 inches. The flower is white, and has a sickle-shape spur of about 2½ inches in length. Sweet scented. The flowering season with me is July and August, although in some of the back volumes of the *Orchid Review* it is said to flower in Spring and in May. There are two or three varieties, with variegated foliage.

BLETIA HYACINTHINA, and variety Gebina.—A very pretty plant. Grows out of doors. Flowers typically purple, but almost pure white in the variety, and produced between April and June.

CALANTHE VERATRIFOLIA.—Distribution in Japan is from Kyushu southwards. Flowering season is July to September.

CLEISOSTOMA IONOSMA, Lindl.—Distribution Loo-Choo island and southward. A cool-house Orchid which grows as high as two feet, and resembles a Vanda. Flowers about 1 inch in diameter, buff colour, with brownish markings. Raceme nearly 10 inches in length, which with me has produced a maximum of 34 flowers. Flowers between April and September, chiefly in May. There are two distinct varieties, one robust, many-flowered and deeper in colour, the other the opposite of this.

CYMBIDIUM LANCIFOLIUM, Hook.—I had this imported from Formosa. It has very broad leaves of about 2 inches in width. Flower of rather small size and creamy in colour. Flowers in May and June.

CYMBIDIUM PUMILUM.—A Formosan Cybidium, about one foot high, with small flowers of dark reddish brown, lip white with crimson spots and yellow keel ; anther yellow. The flowers number about 30 on a spike, and are produced in March and April.

CYMBIDIUM SIMONSIANUM.—From Formosa. Leaves about 3 feet in length. Flowers creamy white with a light crimson line on each segment ; lip crimson, with two light orange keels ; column crimson, anther light yellow. Flowers in October and November, sometimes in December.

(To be continued.)

We regret to announce the death of Arthur R. Handley, Esq., an old member and donor of prizes to the Manchester Orchid Society.

SIR TREVOR LAWRENCE'S ORCHID PAINTINGS.

(*Continued from page* 12.)

ANOTHER rarity is the pretty little Odontoglossum crinitum sapphiratum, which flowered in March, 1895.

If ever a plant created controversial interest it was the one exhibited early in 1901 as Phaius tuberculous, and subsequently re-named P. simulans by Mr. Rolfe as a new species. The full history is given in vol. ix. of this journal, where it is stated that the confusion began with Reichenbach in recording a plant in Sir Trevor Lawrence's collection during the year 1881. Consequently, the large painting of this plant, dated 1882, is of special interest, for, in accordance with Sir Trevor's wish that the artist should show the habit of the plant, the climbing stems so indicative of the species now called P. simulans clearly distinguish it from the original P. tuberculosus, which has conical bulbs.

Cypripedium Stonei magnificum is represented with a four-flowered spike, while the celebrated C. Stonei platytænium, for many years one of the greatest attractions in Sir Trevor's collection, is recorded both in colour and photographically. At the sale of Mr. Day's collection in 1881, a plant realised 140 guineas. Needless to remark, the elegant Cypripedium Lawrenceanum is represented by two varieties. The coloured figure of C. Niobe shows this popular hybrid as it flowered about Xmas, 1890, just a year after its first appearance. A remembrance of Sir Trevor's love for accuracy of detail occurs in the painting of Cypripedium Sanderi-Selligerum, on which has been written, "This has not had the hairs added to it yet," in allusion to the artist's omission to add hairs to the warts on the edge of the petals.

Dendrobium figures include the singular D. amethystoglossum, with its dense cluster of flowers, as well as many hybrids of the D. nobile section, for which the Burford collection was noted. In the painting of Phalænopsis Stuartiana punctatissima it is seen that this variety is rendered distinct by the sepals and petals being marked with numerous purple dots. Pictures of Miltonia Peetersiana and M. Lubbersiana assist in clearing up the difficulties regarding natural hybrids of M. spectabilis.

The three coloured figures of the natual hybrid between Odontoglossum Rossii and O. maculatum are named respectively O. Humeanum, O. violaceum, and O. spilopterum. A plant very seldom seen is that bearing the name Odontoglossum stelligerum burfordiense, July, 1880, but in reality a variety of Oncidium hastatum. There is also a painting of Odontoglossum crispum guttatum, one of the earliest of the much-prized blotched varieties. The accuracy of photographic records is always

appreciated, and in them can be studied some of the details of the Odontoglossums that flowered before the days of artificial hybrids. Some of the largest of these photographs measure 14 by 17 inches.

The representation of Odontoglossum crispum lilacinum, dated March 8th, 1892, is of special interest as being the plant on which an article was written in the *Orchid World*, 1915, p. 77, by Mr. de Barri Crawshay, who there stated that all the plants then known as O. crispum purpurascens were, in fact, pieces of the original O. crispum lilacinum, purchased by Sir Trevor Lawrence, March 4th, 1892. As the flower depicted in this painting agrees with that of O. crispum purpurascens, and is dated just four days after Sir Trevor purchased O. crispum lilacinum, additional evidence has thus been brought to light in support of Mr. Crawshay's statement.

Two large paintings by Macfarlane, dated 1879, and measuring 18 by 23 inches, depict luxuriant plants of Pescatorea Backhouseana and Bollea Lawrenceana. Other similarly large records include Cattleya Warscewiczii var. Regina, with a five-flowered spike, dated 1883, and C. gutta lilacina, showing a three-leaved bulb and a many flowered spike. It is dated 1881, and in the corner is a small sketch of the plant with its ten slender bulbs of varying height. The painting of C. intricata var. Rossii shows the precise result that in 1897 proved the parentage of the natural hybrid between C. intermedia and C. Leopoldii. A point worthy of repetition is witnessed in the coloured drawing of C. Mossiæ splendidissima, which contains a diagram denoting that when the flower is spread out it has a width of $9\frac{5}{8}$ inches.

With Calanthes there is often a difficulty in distinguishing the many hybrids, and for that reason the large sheet depicting eleven varieties that flowered in 1887 is of value; in four of these the whole spike is drawn. Four smaller paintings, dated 1891, are of different Calanthes raised by the late Mr. N. C. Cookson.

Of the remarkable Renanthera Lowii there are three paintings, the largest no less than 3ft. 6in. in length, including a full spike, and showing three basal flowers that differ in formation and coloration, and are also widely separated from the majority of the flowers on the longer portion of the spike. Among Epidendrums are excellent reproductions of E. Wallisii, dated 1879, constituting one of the earliest records of this rare species; E. Endresii, dated 1896, a year before it received a Botanical Certificate at the R.H.S.; and E. elegantulum, a hybrid between the above two species. All these drawings show leafy stems, roots, and flower spike. One other large painting is of the scarce E. porphyreum, with a panicle of about 90 orange-coloured flowers. Zygopetalum Perrenoudii and Z. leucochilum are two elegant hybrids beautifully represented, as also is the giant-flowered Bulbophyllum grandiflorum.

The painting of Cœlogyne cristata alba is dated April, 1881, the year when Reichenbach described it, although it was known for a short time previously. Its value then must have been considerable, for when a plant was put up to auction four years later it realised £131. This variety is entirely without the yellow on the labellum. Cœlogyne pulchella shows a spike of nine flowers, dated April, 1900, just two years after it was originally described as a new species. Two other interesting little plants represented are Scelochilus carinatus, Jan., 1897, a short time after its introduction, and Warrea cyanea. Especially well portrayed is the six-flowered spike of Vanda Miss Joaquim, which received F.C.C., R.H.S., June, 1897. A note on the back reads, "The plant was raised at Singapore by the lady after whom it was named. This is the first flower spike obtained in Europe."

The rare Sobralia Lindenii, the elegant Maxillaria striata grandiflora, and a fine variety of Vanda Sanderiana called roseo-alba may also be considered worthy of mention. Warscewiczella Lindenii represents W. amazonica of forty years earlier date. Many Botanical Certificates were awarded to Sir Trevor's plants, an interesting example of which is seen in the painting of Polycycnis Lehmannii, representing the actual spike from which the original description was drawn up in 1894. Sievkingia Reichenbachiana shows this plant as it flowered in 1896, or two years before being described as a new species. We now come to Trevoria Chloris, a large painting showing the plant with a pair of leaves and a pendulous spike of greenish flowers, which have the uncommon feature of the labellum standing upright. It is seldom that a new genus is created, but Mr. F. C. Lehmann, the author of this one, stated, "I have named this genus of Orchidaceæ in honour and commemoration of Sir Trevor Lawrence, one of the most enthusiastic Orchidists that ever lived. May Sir Trevor's love of Orchids *perdure sempervirent* as Chloris, the goddess of flowers."

ORCHID CULTURE IN JAVA.—From S. Y. Dunlop, Esq., Tea Estate, near Soekaboemi, Java, comes an interesting photograph, taken by himself, showing the interior of his Orchid house, the front of which is composed of wire netting, while the interior can be illuminated by electric light when required. The plants are cultivated in large earthenware pans, having wide apertures in the side for admitting air to the roots, and look remarkably vigorous. In the centre is a fine plant of Cattleya Warscewiczii (gigas) with nine flowers, also the variety of this species known as "Sanderiana," and equally well flowered. Other good flowering specimens include C. Trianæ, C. Mossiæ, C. Schroderæ alba, with six blooms, C. Mendelii, as well as Lc. Aphrodite and Lc. Fascinator. Mr. Dunlop's garden is situated at an altitude of 3,600 feet on the Gedeh Mountain.

DISPERSAL OF ORCHID SEEDS.

IT is a matter of no little surprise to all who consider the question why the pods of Orchids contain such countless numbers of seeds, and why, having regard to the large size of many of the flowers, the seeds should be so very minute. The characters of our cultivated plants are inherited from the imported species, and to obtain anything like a clear insight into the why and the wherefore of the microscopic nature of the seeds, we must consider the natural conditions under which these forms of vegetable life exist. If the seeds upon ripening merely fell directly to the earth, the following generation would be injuriously affected by the restricted area in which the resulting plants attempted to exist. Also, the ground beneath the parent plant might not be suitable for the germination of the seed, in which case, there would be little prospect of further life. Thus we see why the dispersal of seeds over a wide area becomes a necessity, and although a certain proportion may be lost, a number ultimately find favourable conditions for germinating. Although larger seeds would be carried up by the wind in fairly open country, the vertical wind-currents in the forests are weak, and on that account but few of the heavier type would find their way to the higher portions of the trees. To ensure the seeds settling on suitable material, minute dust-like seeds are the most easily dispersed by wind, and these, floating through the air, possess all the qualities for settling on fit places, and at an approximate level to the parent plants. It must not be forgotten that many Orchids only thrive well when situated under suitable conditions of diminished sunlight. Near the tops of the trees they might be scorched by excessive heat, while in the dense shade near the ground they would suffer from insufficient light.

Mr. H. N. Ridley, late Director of the Botanic Gardens, Singapore, has observed that it is not all trees that bear epiphytes. On some of those with smooth bark or with longitudinally groved bark epiphytes are seldom if ever to be found. Whether a tree does or does not bear epiphytes depends on the flow of rain down the branches and stem. Where in smooth-barked trees like Macaranga the rain flows quickly off, vegetable débris and spores cannot rest, and no epiphytes are borne. A notch in the bark of one these may, however, retain a little soil, and epiphytes then usually appear. Ficus Benjamina is a smooth-barked tree, but liable to cracks and other injuries, so that it carries epiphytes readily in parts. The roots of the Orchids and creeping rhizomes of the ferns retain the vegetable débris washed down and blown by wind, and the plants increase until the bough may be covered with epiphytes.

Darwin, in his well-known work on the "Fertilisation of Orchids," remarks that what checks the unlimited multiplication of the Orchideæ

throughout the world is not known. The minute seeds within their light coats are well fitted for wide dissemination, and he had several times observed seedlings springing up in his orchard and in a newly-planted wood which must have come from a considerable distance. This was especially the case with Epipactis latifolia; and an instance has been recorded of seedlings appearing at the distance of between eight and ten miles from any place where it grew. The number of individuals which come to maturity does not seem to be at all closely determined by the number of seeds which each species produces. Mr. Scott found that the capsule of an Acropera contained 371,250 seeds, and judging from the number of flowers, a single plant would sometimes yield about seventy-four millions of seeds. Fritz Müller found 1,756,440 seeds in a single capsule of a Maxillaria, and the same plant sometimes bore half-a-dozen such capsules.

TREATMENT OF EXPORTED ESTABLISHED ORCHIDS.

EVERY exporter of established Orchids has had the experience of receiving a bad account of the condition of the plants on their arrival at the end of a long or delayed journey, or of losses during the days that immediately follow unpacking; there is little doubt, that much of this loss is the result of the wrong kind of treatment in the anxiety of the importer to get the plants back at once to plumpness. The exporting of the established Orchids from this country is an important part of the Orchid nurseryman's trade, and all care is taken in the preparation of the plants before shipment. The beginning of spring and the autumn are the natural seasons for exporting, for then most plants are without new growths; new growths run grave risks if the journey is likely to run to six weeks, but they survive much longer periods in a case that is well ventilated, and when they have been fortunate enough to escape from extremes of heat and cold. If they have been unfortunate in the latter respect, the young growths are likely to arrive black and rotten.

Before packing, the plants are allowed to dry out, and if the journey is a long one the more carefully this is done the better, so that the plants start off on a long journey with no immediate strain on their vitality. For the two or three weeks' journey moderate drying only is necessary, and in a freely ventilated box, and no frost, the plants should arrive little the worse for the journey—even when in full growth—if reasonable care be taken when they are unpacked. During dry, sunny, warm weather, a good plan when drying plants for export is to stand them out in the sunshine, when all unwanted moisture will quickly be drawn from the compost and plant. The plant will then be saved much of the energy lost in the slower drying out process by simply withholding water in the glasshouses.

Of the three big essentials, light, air, and moisture, it is light that is wholly withheld from plants packed in cases, and when they are unpacked after being long in the cases, only a very subdued light should reach them for a few days, much less than is found in an ordinary shaded glasshouse. A dry shed with a genial temperature, healthily ventilated, and with side light only, is the right kind of place to keep the plants for a few days to begin their restoration. No water should at once be given to the roots.

"The plants were in really good condition, but after a few days they lost quite a dozen dark green leaves. Why was this? I gave them all a little water as soon as unpacked. Was this right?" The letter from which the above extract was taken did not say how much light was given. but a fair assumption would be that the plants were placed in the glasshouse where the air was humid and the light good; we also know they were watered at once. One cannot say that those dark green leaves would have stayed on, whatever the treatment, but a little patience in coaxing back the functioning of the leaves might have saved them.

A better plan than watering the roots is to syringe in between the pots, wetting the outsides of them, and thus arrest the further drying of the compost, and this while the plants are still in the dry shed and in an atmosphere that is *not* a "growing" one. During these early days the leaves should be gone over and carefully sponged with tepid rain water, thus removing dust and any impurities that may impede transpiration, finishing with a well squeezed sponge. After a few days of this treatment the plants may be removed to a glasshouse, to a well ventilated dry corner, and well shaded, the light and moisture, atmospherically and at the roots, being ever so gradually increased.

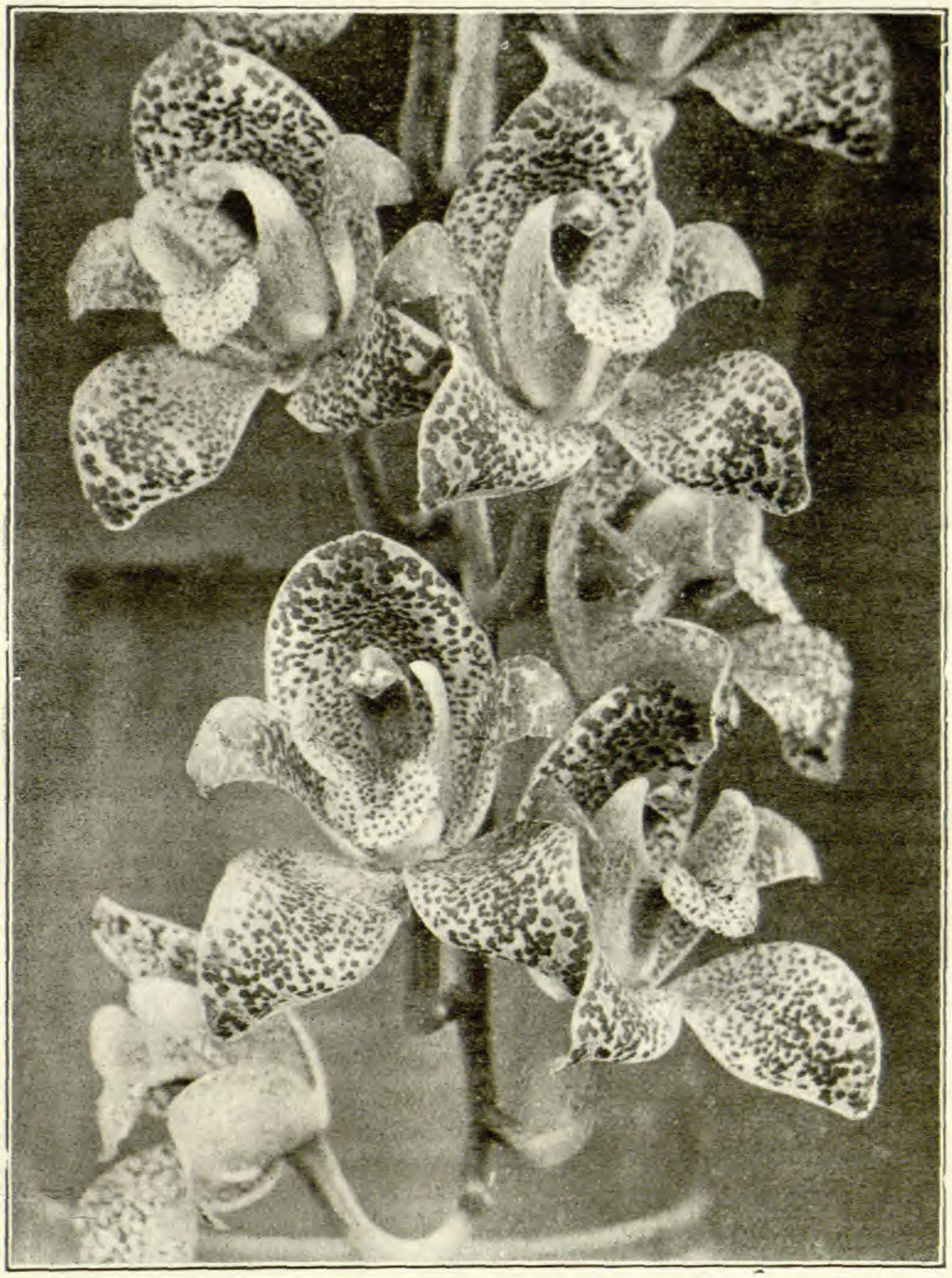
It is a singular fact that it is the plump, green, healthy leaves that are most ready to drop, and when plants arrive in this condition after being a long time in a dark case, particular caution must be taken. On the other hand, plants that have bulbs and leaves shrivelled for want of moisture are much less sensitive in this respect. But it is plants in the former condition that one likes to receive, and I hope the hints given here will be of advantage to those importers of Orchids whose experience of them is limited.

J. M. BLACK.

ORCHID CHALLENGE CUPS.—With regard to the two Challenge Cups that are to be offered for Orchids at the R.H.S. meeting on November 1st, 1921, the first cup, to the value of 30 guineas, is open to all amateurs, and the other cup, to the value of 20 guineas, is open only to such amateurs as employ not more than three assistants, including a head-gardener, in their Orchid houses. Groups exhibited for the smaller cup must not exceed 60 square ft. in area.

CYMBIDIUM HUTTONI.

POPULAR as most of the Cymbidium hybrids are at the present day, there is one rare species that might well be included amongst them. It is C. Huttoni, represented in the annexed photograph of a plant flowered by Messrs. Charlesworth & Co. This species was originally introduced from



CYMBIDIUM HUTTONI.

Java by Henry Hutton when collecting for Messrs. J. Veitch & Sons, in whose establishment it flowered in June, 1867. It is also a native of Sumatra, where Micholitz collected it for Messrs. Sanders. The bulbs are oblong, somewhat compressed, bear very broad leaves at the apex, and

produce a pendulous raceme of about ten fleshy flowers, which turn up in sub-erect position from the point of attachment to the rachis. Flowers light yellowish, spotted with brown, which becomes purplish at the apex of the petals and lip. Allied to C. Devonianum, although Sir Joseph Hooker, in describing it, remarked that it does not much resemble a Cymbidium.

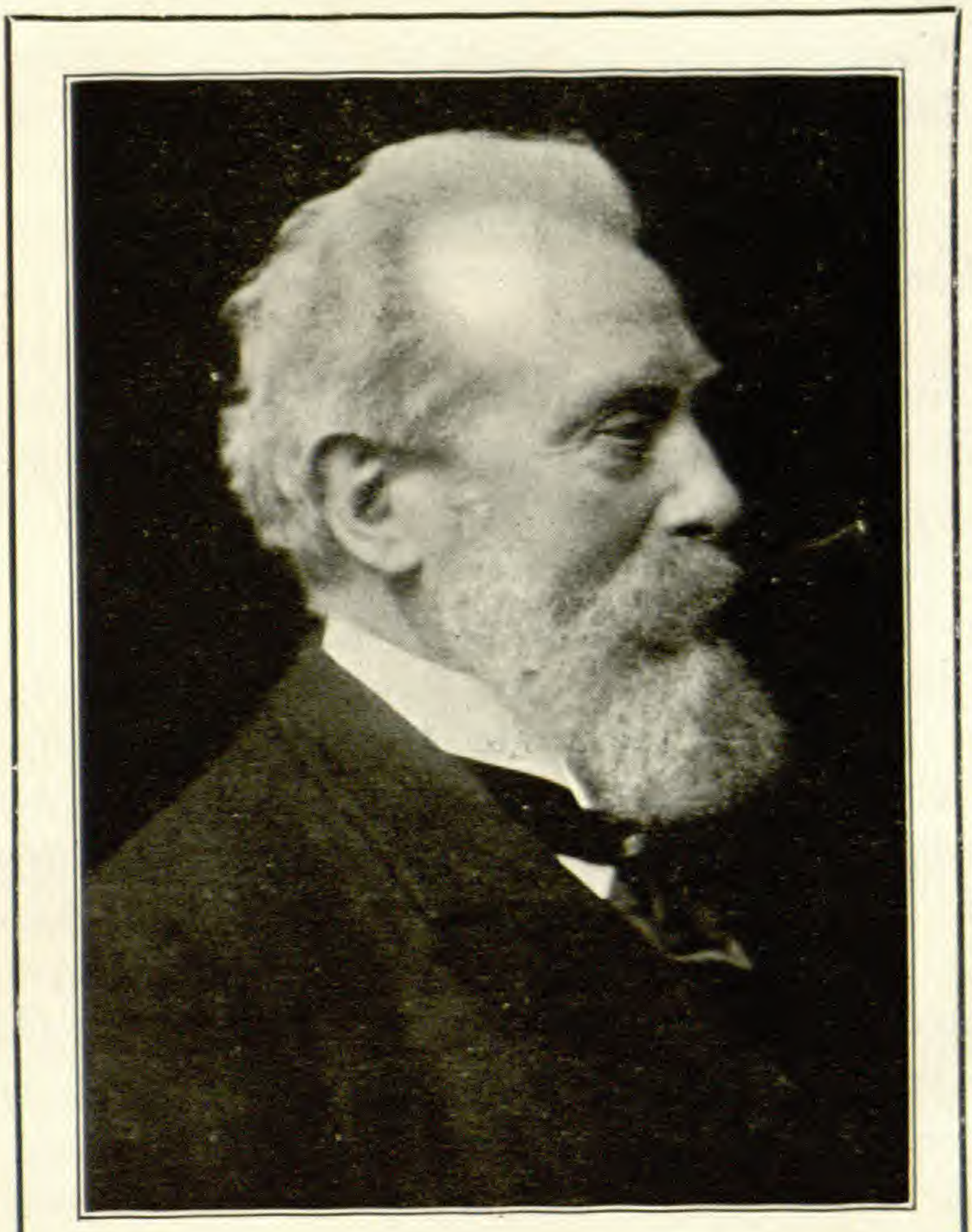
BULBOPHYLLUM MACRANTHUM.—A well-cultivated plant of this singular species was exhibited by Messrs Stuart Low & Co., at the recent Holland House Show. The flowers are so flat that they seem as if they had been pressed between paper. In the centre they are pale yellow, but the outer area is much mottled with dark chocolate-purple. It is figured in the *Botanical Register* for 1844, t. 13., where it is said to have been imported by Messrs. Loddiges from Singapore, and to be closely allied to both B. Leopardinum and B. affine. Some idea of the cultural method then adopted may be gathered from the accompanying note, which states: "Like the rest of the genus it succeeds best when tied to a block of wood, and suspended to a rafter in a moist stove. If the wood is charred enough to burn off the bark the block will be found to answer the purpose much better, and all insects that harbour it will be destroyed. In summer the plant should receive water twice a day at least, and the temperature should be kept about 80 degs. by day, and 68 degs. at night."

DISSOCIATION OF SPECIFIC CHARACTERS.—Messrs. Julius Roehrs Co., Rutherford, N.J., U.S.A., have forwarded an interesting photograph of a Cattleya carrying a spike of three flowers, one of which represents C. aurea, another shows C. Hardyana, while the third is C. Dowiana. When this plant bloomed two years later it again produced a spike of three flowers, all of which turned out to be C. Hardyana, with yellow sepals and petals; a second photograph verifies this event. In reality we have here a natural hybrid between the two species C. Warscewiczii and C. aurea, and known as C. Hardyana. It is, however, the first mentioned photograph that is of biological interest, for it represents this hybrid with its component parts in a state of unstable equilibrium. Dissociation of specific characters has taken place. Another point of interest is that while one might expect C. aurea to appear, it is difficult to account for the presence of C. Dowiana, which is not a parent of the natural form of C. Hardyana. Whether we regard the C. aurea as a geographical form of C. Dowiana, or *vice versa*, there is no doubt that the two are very closely related. The foregoing recalls a remarkable spike of C. aurea that flowered in Sir George Holford's collection in September, 1900. Of the three flowers produced on a single spike, one had the lip veined throughout, except at the margin, the second had a yellow disc, and the third a darker middle area that partially obliterated the yellow veining.

IN MEMORIAM: HENRY F C. SANDER.

THE years 1920 and 1921 will long be remembered among Orchid growers and lovers by the passing away of three great personalities: Mr. J. Charlesworth, head of Messrs. Charlesworth & Co., Haywards Heath; Mr. H. F. C. Sander, head of the St. Albans firm; and Mr. R. A. Rolfe, founder and first editor of this journal.

The life work of Mr. Sander stands pre-eminent in horticulture, particularly so in regard to Orchids, for with them his name was first



THE LATE MR H. F. C. SANDER, V.M.H.

associated, initially in comparative obscurity, but subsequently as to deserve the title of the Orchid King, and as such he will always be remembered. Through his energy, foresight and enthusiasm, the culture of Orchids has reached its present height and popularity. Through his enterprise and determination in collecting new species and the finest types the evolution of the present-day hybrid was made possible, and Orchids have been brought within the reach of all.

A retrospective view of Orchid history will give some idea of the debt

nature lovers owe him. No one can realise to the full the courage required, and the attendant anxiety, to send collectors to countries unexplored as far as horticulture is concerned, and wrest from them new and commercially valuable plants. Hardly a genus in the important family of Orchidaceæ has not been enriched and enlarged by his labours, while many of the older types of species have been superseded by his discoveries of better forms.

Mr. Sander's introductions include Ærides Lawrencæ and A. Sanderianum, Anœctochilus Leopoldii, A. Godseffianus, and A. Sanderianus, Bulbophyllum Ericssonii, B. Micholitzii, and B. macrobulbon, Calanthe Sanderiana, Phaius Sanderianus, Cattleya Gaskelliana, C. Percivaliana, and C. Schröderæ, Cœlogyne Balfouri, C. Mitcholitzi, C. Sanderæ, C. Sanderianum, and C. Swaniana. Also Chysis Bruennowiana, Cycnoches Forgettii, and C. Cooperi, Cypripediums Chamberlainianum, Rothschildianum, and Sanderianum, Gongora Sanderiana, Masdevallias Arminii, Schröderiana, Wendlandii, Forgetii, etc. Maxillaria Hubschii, M. Fletcheriana, M. Sanderiana, M. dichroma, and M. elegantula, Dendrobiums Sanderæ, puniceum, speciosissimum and glomeriflorum, Lycaste Dyerianus, Phalænopsis Sanderiana, Selenipedium Sargentianum, and numerous other species. It is a praiseworthy record.

Of the Orchids that were at one time barely known, save only to scientists, many have been made plentiful in gardens. Of these we may enumerate Cattleyas gigas Sanderiana, C. labiata autumnalis, C. Rex, C. Trianæ, Lælia Jongheana, the white anceps, L. Gouldiana, wonderful forms of Dendrobium Phalænopsis Schröderianum, D. spectabile, D. superbiens, D. atroviolaceum, D. Johnsoniæ, Cypripedium Mastersianum, and C. Fairrieanum. The winter and spring flowering Cymbidiums, now such a feature in gardens and exhibitions, are entirely due to his efforts in obtaining Cymbidium Sanderi (insigne), C. Sanderæ, C. erythrostylum, C. Schröderianum, and C. Ballianum. The introduction of these fine species has led to the creation of the many hybrids, so variable and beautiful in colour and shape, that include Pauwelsii, Castor, Alexanderi, Gottianum, Sybil, Swallow, Martin, Dryad, etc., albanense.

Sander's name will for ever be connected with such elegant Orchids as Cypripedium insigne Sanderæ, C. callosum Sanderæ, C. Lawrenceanum Hyeanum (introduced by him), and C. Curtisii Sanderæ, four outstanding albino Cypripediums, beautiful enough in themselves, but giving rise to even more beautiful hybrids. Brief mention can only be made here of plants other than Orchids, by which, due to his efforts, our glasshouses and gardens have been beautified. Begonias, especially the Rex section, were greatly improved, and hybrids were obtained between the older forms and the new species imported by him. Also Eriocnema Sanderæ, various Sonérilas, Petunia Mrs. F. Sander, Nicotiana Sanderæ, and its many

coloured hybrids, Anthurium Andreanum, imported and improved by cross-fertilisation, Dracæna Sanderiana, D. Godseffiana, Maranta Sanderiana, Oreopanax Sanderiana, Salmea Laucheana, Panax Balfourii Acalypha Sanderi, A. Godseffiana, Areca Ilsemannii, Kentia Sanderiana, etc., etc.

The life history of Mr. Sander reads almost like a romance. Born in 1847, and exhibiting as a boy that love for plants which found its expression first in a small greenhouse built with his own hands, and later in two huge nurseries of world-wide renown, he entered at the age of 20 the nurseries of Messrs. Carter at Forest Hill, probably with the intention of acquiring a knowledge of the seed trade. It was there that he met Benedict Roezl, even then famous as an explorer and plant collector. Both of strong physique and of similar tastes and energy, they became friends and eventually collaborated to mutual advantage. Leaving Messrs. Carters, Mr. Sander commenced business in George Street, St. Albans, as a seedsman, Roezl sending him consignments of Orchids, at first small, but increasing in size as the demand became greater. A warehouse of considerable size attached to the seed shop was often literally packed from floor to ceiling with imported Orchids. Never before had Orchids been received in such quantities or disposed of so systematically, and in numbers to suit all buyers. Roezl, who previously had made a precarious living, was shortly able to retire to his native town of Prague, where a statue to his memory still stands.

The demand for plants was great, and supplies had to be increased. It also became necessary to grow plants in addition to importing them. The houses built at George Street in 1873 were insufficient for the stocks, and in 1881 a model and attractive nursery, covering some 4½ acres, arranged in a square, and circumscribed by a corridor, was built at the Camp, then just outside the town. Here imported Orchids received due attention and were grown on to the flowering state. A number of houses were devoted to seed raising, and hybrids and new plants were tested and propagated.

Nothing daunted Mr. Sander when once he had decided to acquire any particular plant. An enormous specimen of Cattleya Skinneri was heard of, and finally acquired by him from its native owner. To pack and ship such a specimen presented several difficulties, but they were overcome, and the huge plant finally reached St. Albans. On being unpacked it was found to be too large to pass through any of the doors, and rather than reduce this wonderful plant, the doors and end of one of the houses were removed and eventually restored.

The first consignment of Dendrobium Phalænopsis Schröderianum, collected by Micholitz, was lost by the burning of the coasting steamer carrying them. Micholitz notified their loss by cable and at once received instructions from Mr. Sander to "Go back, collect more." On five separate

occasions an Eastern grass arrived dead, but the following attempt met with success. As many as 23 collectors were at one time employed in different parts of the world. Auction sales were held in London, the largest provincial towns, and in America. A single sale has contained as many as 20,000 Orchids.

Having completed the St. Albans' nursery, a branch business was organised at Summit, New Jersey, U.S.A., and placed under the management of Mr. Fostermann, a former collector, and later under Mr. A. Dimmock. Eventually, when found to be too far distant, it was acquired by Messrs. Lager & Hurrell, who still maintain it as an Orchid nursery. In 1886 the authoritative work, "*Reichenbachia*," with life-size coloured illustrations, was published by Mr. Sander, many of the articles being personally supervised by him.

Still restless, Mr. Sander, in 1894, commenced building a nursery at St. André, Bruges, Belgium. In 1914 this had developed into an enormous concern with 250 houses, about 50 of which were devoted to Orchids, the culture of Vanda cœrulea, Phalænopses, Dendrobium superbiens, Lælia Gouldiana and Cymbidium Sanderi being especially successful, while great strides were made in the growing and breeding of Odontoglossums. The Orchid section alone formed a comparatively large nursery, but the remaining houses covered more than four times the area, and contained huge quantities of palms, azaleas, dracænas, and araucarias, while outside a stock of 30,000 trimmed bays, from miniatures to giants, rhododendrons, hardy azaleas, begonias, etc., were grown. His collectors penetrated all parts of the globe to which Orchids are indigenous, and the two nurseries acted as clearing houses to all countries.

Mr. Sander's successes at the leading European and American Horticultural Exhibitions gained for him a world-wide reputation. He was one of the original holders of the Victorian Medal of Horticulture, and held several foreign orders, including that of the Croen of Belgium. He was a baron of the Russian Empire, and as head of the firm he won the French President's Prix d'Honneur in Paris, the Veitchian Cup in 1906, the Coronation Challenge Cup in 1913, 41 Gold Medals, 24 Silver Cups, as well as Medals and Diplomas by the hundred. In International Exhibitions at London, Edinburgh, Brussels, Antwerp, Ghent, Paris, Petrograd, Moscow, Florence, Milan, New York, Chicago and St. Louis he won Gold Medals and highest awards. At each Ghent quinquennial his new plants were amongst the leading attractions to horticulturists from all parts of the world. His personality was felt by all who came in contact with him. Genial to all, and enthusiastic where plants were concerned, it was a pleasure to speak with him on Orchids, and especially interesting and instructive when he could be induced to give personal reminiscences of the struggles to obtain

certain kinds, the delays and disappointments in searching for them, the difficulties of procuring reliable information, and the methods and contrivances to get the plants home.

An Orchid or a well-grown plant always attracted Mr. Sander, and his varied experience, combined with an instinctive sense, enabled him to realise, almost at a glance, its prospective merits and commercial value. His wonderful knowledge and memory enabled him to compare its characters with other known species that were not at that moment available for actual comparison. So keen was he, that often when a new species or variety was opening its flowers, he would visit it night and day, well knowing that they would not be developed until 24 or 36 hours later. If there were two plants he held in esteem above all others, they were Sophronitis grandiflora and a well-shaped bay tree. The Sophronitis colour appealed to him, and when the plants were in flower he invariably dwelt over them, declaring it was a shame to sell such gems for shillings, as their beauty entitled them to the guinea rank. In St. André he pointed with pride to some magnificent bays with stems six feet high, and glossy, deep green foliage, all selected and trimmed with his own hands when he first commenced the nursery.

A man of immense energy and indomitable will, he never spared himself. When forming the St. André Nursery he worked hard throughout the whole of the day, sleeping only when he travelled backwards and forwards on boat and train, apparently without any injurious effect. But when in 1914 the world war broke out, he and his family, as British subjects, had to retreat from the Germans, reaching England almost by the last boat. The enemy occupied the Nursery, and Mr. Sander saw his whole work in Belgium jeopardised, not knowing from one day to another whether there was, or was not, a Nursery.

Mr. Sander remained at St. Albans, but his health was not nearly so vigorous. Anxiety for his son and other members of his family in the British army, the worries of the Belgian nursery, the coal and labour difficulties at St. Albans, and, above all, the grief caused by the increasing illness of his wife, impaired his constitution and brought a recurrence of a previous illness. He visited the Belgian nursery once after 1918, and also again went to that country for an operation advised by his medical specialists, by which he hoped to regain his strength and devote more time to his wife. But after a sudden relapse he passed away on December 23rd, 1920, at the age of 74. His remains, interred at St. Albans a week later, were followed by many of his past employees, as well as by clients and patrons whose business relations had long since merged into friendship. His great success was in no small measure due to the personal element introduced into all his transactions, and this, combined with wonderful foresight, energy and knowledge, endeared him to one and all.

"Thus, with the passing of 1920," states the *Horticultural Trade Journal*, "there passes away a grand old man, a master mind in commercial horticulture, whose enterprise stamped him as one of the foremost horticulturists of the day. For nearly half a century he was a familiar and commanding personality at all the leading horticultural events in Europe, and for a like period the name of Sander was honoured and respected throughout the world. It was always a pleasure to the late Mr. Sander to personally conduct visitors over the nurseries at St. Albans and Bruges, and it mattered not whether the visitor was prince or plebian, millionaire or gardener, he was to each the same genial, kind, courteous gentleman. Unostentatious to a degree, a big man with a big heart for his fellow men, his welcome was always warm and genuine. As he walked with one through his greenhouses —acres and acres of them—his encyclopædic knowledge of plants and their characteristics was imparted with charming fluency, delightful and instructive to the listener. Alas! We shall hear that voice no more. To-day the horticultural world is poorer by the passing away, full of years and honours, of one who enriched it by his manly presence, kind actions. wise counsels and unfaltering enterprise, qualities that endeared him to all who had the good fortune to come in contact with him. The name of Henry Sander, founder of the firm, will long remain an honoured and respected name in the realm of Orchids and in the annals of plant history. His mantle falls upon his sons, Fearnley, Fred and Louis, who were associated with their father in the development of the business."

LYCASTE LOCUSTA.—A fine example of Sanders' variety of this quaint flowering species was exhibited in Sir Jeremiah Colman's Gold Medal group at the recent Holland House Show. It was originally found by Davis in Peru when collecting for Messrs. Veitch, and described by Reichenbach as follows:—"A new Lycaste allied to L costata and L. Barringtoniæ, with a white column, green sepals, green petals, a green lip, a green callus, a green ovary, green bract, green sheaths, a green peduncle, green bulbs, green leaves—just as green as a green grasshopper, or the dress of some Viennese ladies. It is nearly as satisfactory to study this group as it is to brush hedgehogs, but this species is better than the sister species; it is very well distinguishable by its very fleshy, short perigones, very short blunt mentum, convex disc of the anterior lacinia of the lip, and the two sharp keels running between the side laciniæ. If Mr. Seden could cross it with a pure-white Lycaste Skinneri we might get a flower with a good Saxon flag, white striped with green, if things develop as we would have them" (*Gard. Chron.*, 1879, p. 524). Sanders' variety is a superior and rarer form with larger flowers, the labellum more heavily fringed and with a slight yellow tint.

ORCHIDS IN PAPUA (BRITISH NEW GUINEA).

THROUGH the invitation of H.E. the Hon. J. H. P. Murray, Mr. C. T. White, F.L.S., spent five weeks botanizing in the territory of Papua during the months of July and August, 1918. In conjunction with Dr. R. S. Rogers, M.A., the results were read before the Royal Society of South Australia, June 10th, 1920, and published with four plates as a contribution to the *Orchidaceous Flora of Papua, British New Guinea* (trns. vol. xliv., 1920). All the specimens were gathered in the mountainous country between Dilava and Mafula, at an elevation of 3-4,000ft., and about 60 miles inland from Yule Island on the Southern coast.

The new species include Physurus bicalcaratus, allied to P. chinensis. The author states that the genus Physurus comprises about 74 recorded species, the vast majority of which are natives of the New World, only 10 being found in Asia and in certain of the islands lying to the south and east of that continent. These islands include Japan, Formosa, Java, Sumatra, and New Guinea. The flowers are inconspicuous, but some of the plants are prized for their beautiful leaves, resembling in this respect the genus Anœctochilus, to which, indeed, Physurus is closely related.

Goodyera hispidula is said to approach very closely G. longibracteatea, Hayata, with which species it may ultimately be deemed identical. Spathoglottis papuana var. puberflora, departs from the type by the presence of innumerable short setaceous hairs on stem, bracts, pedicels and outer surface of flowers, the type being quite glabrous; also by the pubescent condition of the posterior portion of the upper surface of the labellum. Habenaria ramosa falls under Kränzlin's section "Medusæformes," and approaches H. ternata, Reich. f. Cryptostylis erythroglossa, Hayata, has the labellum white with reddish base, spotted, and thus differs from the Formosan plant, which has the labellum entirely red.

Dendrochilum Murrayi is a new species named in honour of the Hon. J. H. P. Murray, Lieut.-Governor of Papua. Following the description, it is remarked that the history of the genus is interesting. It was founded by Blume in 1825. In 1843 Nees and Meyen described from an imperfect seeding specimen without flowers a new genus Acoridium, which they regarded as non-orchidaceous and placed in the order Philydraceæ. It was transferred almost immediately by Endlicher to the Burmanniceæ, and later on was again removed to the Cyperaceæ, in which order it remained for many years with the somewhat doubtful approval of Bentham. In 1884 Bentham split Blume's genus into Dendrochilum and Platyclinis, the former having a lateral and the latter an apical inflorescence (*i.e.*, in regard to their origin from the pseudobulb). In the Genera Plantarum, Platyclinis appears among the Epidendreæ under the sub-tribe Liparieæ, and Dendrochilum is placed

under Dendrobiæ. Much more recently flowering specimens of Acoridium were discovered, and though they were relegated to their true order, their identity with Nees and Meyen's imperfect specimen was not at first recognized. Ultimately, however, this was established by Rolfe, who also showed that Acoridium was identical with Bentham's genus Platyclinis. But inasmuch as the former name had precedence over the latter by more than 40 years, Platyclinis became reduced to a synonym of Acoridium. About 1907 J. J. Smith reconstructed the genus Dendrochilum so as to include within it all Orchids hitherto placed under Acoridium and Platyclinis. These two genera are now reduced to the rank of subgenera or sections. This arrangement appears to have received the approval of botanists generally, and has been adopted by Ames, and also by Pfitzer and Kränzlin in their monograph of the Cœlogyneæ (*Das Pflanzenreich*).

COLOUR OF CŒLOGYNE PANDURATA.

THE most remarkable thing about the genus Cœlogyne, states Mr. T. D. A. Cockerell (*Torreya*, vol. xix., Nov., 1919), is that the lip in some of the species is marked with black. I have before me a number of fresh flowers of C. pandurata. The profuse marking of the pale greenish lip is dull black, with a very faint rusty tint. The small concavity at the extreme base is cinnamon-brown. The other segments are pale yellowish green. The column is suffused with apple-green, especially at the tip.

On examining the black markings of C. pandurata under the microscope and in sections, Mr. Cockerell found that they were entirely superficial, situated on innumerable closely-placed small papillæ. By transmitted light they appear brown, and the cinnamon colour of the basal depression is doubtless due to the same pigment in dilute form. The pigment gives none of the anthocyanin reactions, nor does it look like anthocyanin. It is soluble in strong alkaline solutions, and produces a cherry-coloured liquid. This readily stains paper, but does not change colour on drying. Acid almost entirely discharges the brown colour.

Mr. Cockerell further states that he is indebted to Dr. F. Ramaley for the suggestion that the reactions resemble those of turmeric, derived from Curcuma (Zingberaceæ). The pigment in turmeric is curcumin, $C_{14}\ H_{16}\ O_7$. It seems evident that Cœlogyne possesses a closely related though doubtless distinct pigment. Even in species such as C. speciosa and C. asperata, in which the lip is marked with red or cinnamon, there is probably no anthocyanin at all. Pfitzer and Kränzlin remark that blue or blue-violet colours are lacking in the whole tribe Cœlogyninæ, but the genus Pleione, to judge from the descriptions, must certainly possess anthocyanin.

CULTURAL NOTES.

By H. G. ALEXANDER, Orchid Grower to Lt.-Col. Sir GEORGE HOLFORD, K.C.V.O., Westonbirt.

MILTONIAS.—The vexillaria family is the most showy and popular of this genus, and the plants are mostly vigorous and very floriferous under good treatment. They are restless Orchids, frequently starting into growth again after a very short rest following their flowering and the completion of their pseudo-bulbs. Any necessary repotting is best done as soon as new growth commences, shifting into larger pots or pans any young vigorous plants that require more root space, with as little root disturbance as possible, while exhausted specimens are best broken up and started anew. A plant may remain in the same pot for two years, therefore the best potting material should be used. Osmunda or AI fibre, Polypodium fibre and sphagnum, in equal parts, makes a suitable potting compost. The new receptacles should be well drained, and in no case should the plants be overpotted. Potting should be done moderately firmly and the plants surfaced with a mixture of hard fibre one part, to two parts of sphagnum. Afterwards they should be staged together in a house where an intermediate temperature is maintained, and shaded from strong sunshine. The water supply during the early stages of growth is a very important item; an occasional light watering with a can to which a fine rose is affixed will keep the rooting material sufficiently moist, providing the house is kept moist, and the plants frequently sprayed over on fine days when the air is hot and dry. Small yellow thrips often attack the succulent young growths unless checked by occasionally spraying the plants in the evening with some approved insecticide.

CŒLOGYNE.—The species asperata, Dayana, and Massangeana, are remarkable Orchids that produce a fine effect when the plants are well flowered, as the graceful racemes present an appearance quite distinct from other members of the genus. These three species have much the same habit, but the last named is not quite such a strong grower as the others, and will succeed in less heat than is necessary for them, an intermediate temperature suiting it best. The best time to repot these plants is in the early spring, when they first show signs of activity, but they do not like very frequent disturbance, and will not require it, provided good rooting material is employed at the repotting. The strong and free growing kinds require good-size receptacles provided with ample drainage, and the plants are best cultivated in shallow pans or baskets suspended from the roof rafters under moderate shade. When well established, they require copious supplies of water during the growing season, but during the winter, when

the plants usually rest, a greatly diminished supply is then required, but they should never be allowed to get dry enough to shrivel.

CYCNOCHES, CATASETUM AND MORMODES.—Along now, when these plants are in full growth, they require plenty of heat, and are best grown suspended close up to the roof-glass, and afforded a light position. Whilst root action is free, they should be supplied with abundance of water at the roots and moisture in the atmosphere, and in bright weather the foliage should be syringed freely. After the flowering period, which takes place as the pseudo-bulbs become mature, the plants should be afforded more air and sunlight to ripen the bulbs, and a plentiful supply of water at the roots should be provided until the bulbs are ripe and the leaves have fallen. Afterwards the plants are very impatient of moisture, and water should be almost entirely withheld.

STANHOPEAS.—The best species of this genus are attractive Orchids that are worth growing, for they are easily cultivated and free flowering. The flower spikes being pendulous, often pushing their way downwards through the compost, the plants are best grown in open, teak-wood baskets, so that the spikes can readily find an opening to push their way through, and the baskets should be well drained, with pieces of charcoal in preference to crocks. Stanhopeas thrive best suspended near the roof-glass in the Cattleya or similar house, and although a clear light is beneficial, the plants should be shaded from strong sunlight, as very bright sunshine will injure the foliage. During the growing season these plants delight in abundance of water at the roots and overhead syringing, but when growth is finished they should be rested in a cooler house, and only enough water given them to keep the pseudo-bulbs from shrivelling.

PHALÆNOPSIS.—Nothing could be more suitable for these than the tropical weather which prevails as these lines are being written. But owing to the great heat every means must be taken to promote atmospheric moisture. Plants that are well established and rooting freely will now require an increase in the supply of water at the roots, but even now this should not be overdone, free growth is essential, but it should be consolidated as it is made. I am not in favour of much overhead syringing for these Orchids, not even in the hottest weather, except in certain cases where it is advantageous: for instance, plants that were potted late and have not made many roots, must not be given frequent root-waterings, but they may be greatly assisted when the atmosphere is hot and dry by light overhead sprayings. Soft water should always be used, as hard water leaves a deposit on the leaves necessitating some force to remove it, and it is injurious to the roots.

CYPRIPEDIUMS.—The group of this genus, which includes C. Curtisii, C. callosum, C. Lawrenceanum, C. Maudiæ and others that usually flower

during the late spring and early summer, are attractive and useful Orchids. These plants need the heat of the warmest division, and should be given a position where they can be shaded from strong sunshine. The present is a very suitable time to overhaul the plants, with a view to the providing of new rooting material to those that need it. These kinds thrive better when potted in Osmunda or AI fibre and sphagnum, with a little loam fibre added for the strongest growing sorts, than in a heavier material. Plenty and efficient drainage is necessary, as much soil about their roots is undesirable,

CYPRIPEDIUM MAUDIÆ, AS CULTIVATED BY MR. H. G. ALEXANDER IN THE COLLECTION OF LIEUT.-COL. SIR GEORGE HOLFORD, K.C V.O., WESTONBIRT.

and every endeavour should be made to keep the compost sweet and open. All through the growing season the roots should be freely watered, and there should be plenty of moisture in the atmosphere. Light sprayings overhead with soft, tepid water when the weather is favourable are very beneficial, especially to those kinds that have tesselated foliage.

SUCCULENT CYPRIPEDIUMS.—The distinct little group of this section, composed of C. concolor, C. bellatulum, C. Godefroyæ, C. leucochilum, C. niveum, etc., may justly be included among the gems of this extensive genus, but it cannot be said that these are so easily managed as the majority of Cypripediums. Plenty of warmth and atmospheric moisture are essential for their successful cultivation, and the plants should be grown close up to the roof-glass. In a state of nature these plants are found growing in far more sunshine than the majority of species, and they undoubtedly retain their liking for a good light when under cultivation. Shading of course is necessary, because exposure to direct sunshine under glass would ruin the foliage, but at the same time the plants should not be overshaded. In affording water to the roots the greatest care is necessary at all times, and more especially during the winter months, but during their most active season of growth the roots of the plants should at all times be kept fairly moist. Repotting is best done soon after the plants have ceased to flower, but disturbance at the roots should not take place unless the condition of the compost makes this necessary. The plants usually grow best in a compost consisting of turfy loam, good peat and sphagnum, and they display a preference for limestone used in lieu of crocks for drainage. Crushed limestone may also be mixed with the compost to keep it open. There are numerous hybrids from these species, some of which grow and flower freely, while others are most difficult to retain in a satisfactory condition, requiring very careful treatment at all times.

SEED RAISING.—Some years ago Mr. Theodore L. Mead, of Oviedo, U.S.A., found the following method of raising seedlings to be successful. Culture tubes similar to those used by physicians for bacterial tests were partially filled with "Beefbroth agar." A little seedling Orchid, one with a leaf-point, was then carefully laid in the jelly and in a day or two filaments of mycelium had grown from it, at the rate of about one-eighth of an inch per day until the surface was covered. But as it was impossible to sterilize the seedling to begin with, there were other moulds present besides the one desired. The jelly was then put into a mass of leaf-soil and chopped up finely with some sphagnum moss. When the mixture was well inoculated it was used as a medium on which to sow the seed. Mr. Mead also used a compost of sterilized leaf-soil, inoculating it with the surface-moss from vigorously rooting adult Orchids.

AUSTRALIAN ORCHIDS

A PAPER entitled "A further contribution to Australian Orchidology," was read by Dr. R. S. Rogers before the Royal Society of South Australia, Oct. 14th, 1920 (Trns. xliv., p. 322). The new species described are Drakæa Jeanensis, figured on plate 13, and which, it is stated, should be placed in the section where the labellum is articulated at the end of a basal projection of the column and where the flower is solitary. Prasophyllum lanceolatum is named in reference to the lanceolate shape of the segments of the perianth and labellum. P. ellipticum is a tall robust plant producing a spike rather crowded with numerous pale green flowers. Western Australia, states Dr. Rogers, must be regarded as the home of the giant Prasophyllums, which are evidently more numerous than was formerly supposed. Some of them reach extraordinary heights when compared with the diminutive members of the genus, which do not exceed two or three inches. Quite recently the author saw on the Upper Kalgan River, in Western Australia, a specimen of P. elatum which reached the height above ground of 5ft. 4½in. (about 161 cm.), with a stem at least an inch in diameter. It was absolutely erect, and, with other plants of the same species, constituted an imposing feature of the landscape.

Microtis truncata is described as a plant of slender habit, with a spike bearing about 40 distinct flowers. Caladenia iridescens, also figured on plate 13, has the stem reddish-purple, and the flowers usually solitary and of a dusky-red colour mingled with iridescent golden tints. Its unusual and beautiful colouring gives it at first sight a very distinctive appearance, but a careful analysis shows that it has close morphological affinities with C. congesta and C. testacea. Caladenia cordiformis, which is not uncommon in Victoria, is described as a fairly robust plant, with a stem very hairy and the flowers singly. It approaches most closely to C. ovata, but differs very materially as to the calli, and blooms in September and October.

During the spring of 1919 Dr. Rogers paid a botanical visit to Western Australia, chiefly with the object of recovering some of R. D. Fitzgerald's species, very few of which were represented in any of the national collections. Many of the observations and records that resulted from the visit are also published. Of Caleana nigrita, Drummond has stated: "This plant is rare, and where it grows it is not easily found, its whole appearance being that of charcoal, among which it usually springs up." The specimens discovered by Dr. Rogers at Ravenswood did not resemble charcoal, neither did they grow on burnt ground.

A pure-white specimen of Lyperanthus nigricans was found at Mount Barker, Western Australia. There were several flowers in the raceme without the suggestion of another colour. It was placed between the

blotters, and, on removal, true to its designation, was found to be absolutely black!

Caladenia Patersoni is said to be the largest and the most beautiful of all the members of the genus. The flowers are white, or almost so, with long dusky tentacles which are covered with glandular hairs. Dr. Rogers calls attention to the illustration of this plant in Lindley's Swan River Appendix, plate viiia, in which the colour is incorrectly shown as being very distinctly yellow with purple caudæ to the segments of the perianth, and purple combings and calli on the labellum.

Caladenia dilatata is probably the best known of the "spiders," and despite its wide range in the Commonwealth, it is subject to extraordinary few variations. Dr. Rogers once collected specimens in Monarto in which the lateral sepals were non-clavate, and on one occasion he received specimens in which the combing of the lateral lobes of the labellum was absent. Apart from teratological changes, these were the only morphological variations that came under his notice. Chromatic variations are, however, he says, occasionally met with. They seem to be due to the omission of one of the colours from a three-colour scheme, in a flower in which the three primary colours—green, yellow and red—are much in evidence. The red is most frequently omitted, causing stripes to vanish from the perianth, and conspicuous markings from the labellum. This gives to the flower a strangely unfamiliar appearance.

BONATEA ANTENNIFERA.—A native of Rhodesia, and sent to Kew, in 1905, by C. F. H. Monro, Esq., Buluwayo. It is closely allied to the well-known B. speciosa, Willd., but is much taller, being three feet high, with longer leaves and a laxer inflorescence of equally large flowers, and the lobes of the lip and petals much more slender. These are about two inches long, and antenna-like, in allusion to which the name is given.

CYMBIDIUM ERYTHROSTYLUM, ROLFE.—This striking species was introduced by Messrs. Sanders, from Annam, through their collector W. Micholitz, and first flowered by Sir Fred. Moore at the Royal Botanic Gardens, Glasnevin. It is allied to C. Parishii and C. eburneum, but is more slender in habit. The leaves are over a foot long by half an inch broad, and the infloresence produces several flowers about an inch and three-quarters long. Their colour is white, with a few rows of purple dots down the centre of the petals below the middle, while the three-lobed lip is closely lined with red-purple. The column is remarkable for its bright crimson colour, in allusion to which the name is given.

ROYAL HORTICULTURAL SOCIETY.

June 21st, 1921.

Members of the Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Prince Tadashige Shimadzu, Messrs. Jas. O'Brien (hon. sec.), Pantia Ralli, J. E. Shill, F. J. Hanbury, Stuart Low, F. K. Sander, A. Dye, C. J. Lucas, Gurney Wilson, and J. Wilson Potter.

FIRST-CLASS CERTIFICATE.

Cypripedium Enchantress (Curtisii Sanderæ × Alma Gevaert), from Messrs. Sanders. A most pleasing result, in which three albino Cypripediums — Curtisii Sanderæ, Lawrenceanum Hyeanum, and callosum Sanderæ—are blended. The large flower is of bright apple-green colour, the broad and erect dorsal sepal whitish, veined with green and suffused with darker green at the base. A fine addition to this section.

AWARD OF MERIT.

Læliocattleya Victrix (C. Trianæ Backhouseana × Lc. Aphrodite), from Baron Bruno Schröder, Englefield Green, Surrey. An attractive flower of full size, and having the petals suffused with rich purple colour deepening at the tips; the labellum of good shape and dark plum-purple.

GROUPS.

Messrs. Stuart Low & Co., were awarded a Silver Flora Medal for an extensive exhibit containing fine plants of Cattleya Warscewiczii, some having 7-flowered spikes. Epidendrum vitellinum, E. prismatocarpum, the quaint Oncidium Kramerianum, O. Papilio, Renanthera Imschootiana, with many flowered spikes, Odontoglossum Astarte, and various hybrids, Lc. Ayesha (Lc. Hyeana × Lc. Martinetti) had richly coloured flowers.

Messrs. Charlesworth & Co. received a Silver Flora Medal for a fine group, in which the pretty Cattleya Hesta with violet markings on the lip was a feature. Other choice plants were Sobralia Lyoth, dark crimson-purple, the new Odontonia Sylvia (M. Venus × O. percultum), Bulbophyllum Lobbii, B. barbigerum, and numerous varieties of albino hybrid Odontoglossums.

Messrs. Sanders were awarded a Silver Banksian Medal for an exhibit containing the new Cypripedium Enchantress, the scarce Cattleya Warneri, Cypripedium Euryale, and the pretty Dendrochilum latifolium. Among the Dendrobes were D. Gibsonii, D. suavissimum, and D. Dalhousieanum.

Wm. R. Fasey, Esq., The Oaks, Holly Bush Hill, Snaresbrook (gr. Mr. Seymour), exhibited Odontoglossum illustworth Fasey's var., all the segments being rich purple-claret, except for a narrow white margin. Also Miltonia Constance (vexillaria Lyoth × Isabel Sander), white, tinged with rose, the labellum having a crimson-red mark; and Blc. Jupiter Fasey's var., with two immense flowers of rose tint.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood), showed the fine Odontoglossum Mauretania, with a spike of eight large flowers; and Odontoglossum Radiant, of bright rose-violet colour, blotched with purple.

Baron Bruno Schröder, Englefield Green (gr. Mr. J. E. Shill), staged some fine flowers of Lc. Mrs. Willoughby Pemberton.

Messrs. Flory & Black exhibited an excellent variety of Cattleya Mossiæ Wageneri.

HOLLAND HOUSE SHOW.

THE Royal Horticultural Society held their Summer Show in the beautiful grounds of Holland House, July 5th, 6th and 7th, when the following members of the Orchid Committee were present:—Sir Jeremiah Colman, Bart. (in the chair), Messrs. J. O'Brien (hon. sec.), T. Armstrong, J. E. Shill, Pantia Ralli, R. G. Thwaites, H. G. Alexander, Gurney Wilson, Fred. K. Sander, C. H. Curtis, A. Dye, J. Wilson Potter, E. R. Ashton, W. J. Kaye, W. H. White, J. T. Barker, Stuart Low and W. H. Hatcher.

FIRST-CLASS CERTIFICATE.

ODONTIODA MAGNA RUBRA, from Messrs. Armstrong & Brown. A beautiful result in which the erect spike carried seven flowers, having broad segments of bright scarlet colour; the extreme edge of the sepals and petals as well as the apex of the labellum being of lighter tint and making a pleasing contrast.

AWARD OF MERIT.

LÆLIOCATTLEYA SOULANGE, Ralli's variety, from Pantia Ralli, Esq., Ashstead Park, Surrey. A charming hybrid with a couple of large flowers of soft rose-pink colour, the labellum of darker rose-purple, obscurely blotched on the side lobes with yellow.

GROUPS.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey (gr. Mr. J. Collier), was awarded the Cain Challenge Cup for the best exhibit in the Show staged by an amateur, as well as the R.H.S. Gold Medal. Plants of special attraction were Cattleya Warscewiczii, var. Mrs. E. Ashworth, with a spike of three delicately-tinted flowers; Lycaste Locusta, Sander's var., in which the greenish flower has the lip more heavily fringed; Dendrobium Victoria Regina, with bluish flowers; Scaphosepalum octhodes, known as the Owl Orchid; Anguloa Cliftonii, richly coloured; A. brevilabris, of recent introduction; Nanodes Medusæ, with its singular greenish flowers; Dendrobium Aphrodite, very scarce; Odontoglossum hybrids in great variety; Cattleyas and their derivatives in excellent condition; as well as a host of smaller flowering species of botanical interest.

Messrs. Charlesworth & Co., were awarded a Gold Medal for an

excellent exhibit of numerous hybrids and new varieties. Mention may be made of Cattleya Hesta, white with violet blotch on the lip; C. Hentshelii, of rich dark purple; Miltonia Hyeana var. Pharos, rose-coloured with purple veining; M. Schröderiana, now scarce; Vuylstekeara Nora (M. Harwoodii × Oda. Cooksoniæ); Lc. Momus, with broad, flat petals; Lc. Canhamiana in variety; Brassocattleyas showing improvement in the width of the petals, and Odontioda Ceres, cream-yellow with red-brown markings.

Messrs. Mansell and Hatcher received a Silver-gilt Medal for a most attractively arranged exhibit of Odontoglossums and Odontiodas, all the plants being well-flowered and in fine form. The Cattleyas included Orange Gem (iridescens × triumphans), Helen Langley, pure white, and Judah, rich purple. Of the Cypripediums, good flowers were seen in Maudiæ and Boltonii; while Miltonias embraced Bleuana var. Goliath; Hyeana var. Fairy; and Sanderæ. Many fine forms of Lc. Canhamiana were also noticed.

Messrs. Stuart Low & Co., were awarded a Silver-gilt Grenfell Medal for an unusually fine series of Cattleya Warscewiczii, the variety Meteor being of outstanding merit. Dendrobiums were represented by Farmer, album, Parishii and Thwaitesiæ; Læliocattleyas included Vesuvius, Ophiri Aphrodite and Stevenson, all very distinct. Vanda cœrulea, Aërides Fieldingii, Epidendrum prismatocarpum and Bulbophyllum Collosus, were points of attraction, and the curious Bulbophyllum macranthum.

Messrs. Sanders received a Silver Flora Medal for a fine group comprising many rare species, of which Luisia Psyche and Dendrobium Cymbidioides were seen to advantage. Odontioda Coquelicot carried bright reddish flowers; Phaius Sanderianus and Sobralia Amesiæ were well-flowered; Odontiodas included Ralph Sander and brugensis; Cypripedium Curtisii Sanderæ, C. Maudiæ and C. Olivia were all excellent; while amongst a fine batch of Lc. Isabel Sander was the rare Angulocaste Bievreana (A. Ruckeri × L. Skinneri).

H. T. Pitt, Esq., Stamford Hill, exhibited some most interesting plants and received a Silver Flora Medal. In the centre of this group were two specimens of Dendrochilum filiforme, each with about forty graceful and many-flowered spikes; also the rare Bulbophyllum macrobulbon, shown in robust condition with finely developed flowers; Masdevallia muscosa, always of interest; Cypripedium Enchantress, a beautiful novelty; Thunia Winniana, now uncommon; and a well-flowered Renanthera Imschootiana.

Pantia Ralli, Esq., Ashstead Park, Surrey (gr. Mr. S. Farnes), exhibited Odontoglossum eximillus, a fine variety with purple-blotched flowers; and

Odontioda Colinge var. illuminata (Oda. Coronation × Odm. crispum), rose ground with reddish blotching.

Messrs. Armstrong & Brown staged Odontoglossum Agate with an erect spike of eight white flowers having occasional spotting.

MANCHESTER ORCHID SOCIETY.—The current session of the Manchester and North of England Orchid Society, covering the period June 23rd, 1921, to May 11th, 1922, gives great promise of success. The President, A. Hanmer, Esq., is well supported by 15 Vice-Presidents and a Committee of 26 members. A Gold Medal, presented by J. J. Bolton, Esq., Claygate, Surrey, is to be awarded to the amateur who gains the highest number of points for Cypripediums; and a Silver-gilt Medal as a second prize. The Royal Botanic Society of Manchester will give a Silver-gilt and a Silver Medal to the employers of the gardeners gaining the most points in Cultural Certificates; and Money Prizes to the gardeners who hold the first three positions are offered by Dr. R. N. Hartley. Messrs. Charlesworth's Objet d'Art will be awarded to the amateur who gains the most points for new awards, i.e., plants that have not been previously certificated. Messrs. Cypher's Gold Medal will be given to the amateur who gains the most points during the session for groups. Mr. J. Evans' Silver Trophy is for the amateur who gains the most points for Odontoglossums. A Silver Cup, presented by S. Gratrix, Esq., is for the amateur who exhibits the best Odontiodas. Another Silver Cup, presented by A. Hanmer, Esq., is for the amateur who gains the highest number of points for groups and individual plants. Messrs. Hassall's Trophy will be awarded to the amateur who obtains the highest number of points for various specified hybrids. Capt. W. Horridge will give three Money Prizes for the gardeners gaining the most points for home-raised seedlings. Messrs. McBean offer a Trophy to the amateur who stages the best Cymbidiums. Messrs. Sanders' Gold Medal is for the amateur who gains the highest points for exhibits of cut Orchid flowers. P. Smith, Esq., offers three Money Prizes for the gardeners exhibiting the greatest number of groups. And, lastly, the Society offers Gold, Silver-gilt, and Silver Medals for the amateurs who gain the highest number of points during the session. Similar awards will be made to amateurs who grow Orchids without the aid of a gardener. The usual Medals will be awarded for occasional groups, and there are also some additional Money Prizes.

YORK GALA.—At the York Floral Fête and Gala, June 15th-17th, Messrs. Armstrong & Brown were awarded the President's Prize for the best group in the whole Show. Other awards are reported on page 16 of our last issue.

MANCHESTER ORCHID SOCIETY.

June 23rd, 1921.

MEMBERS of the Committee present :—Rev. J. Crombleholme (in the Chair), Dr. R. N. Hartley, Messrs. R. Ashworth, B. J. Beckton, J. Birchenall, A. Burns, D. A. Cowan, A. Coningsby, A. Hanmer, J. Howes, A. Keeling, D. McLeod, E. W. Thompson, and H. Arthur (Secretary).

S. Gratrix, Esq., West Point (gr. Mr. J. Howes), was awarded a Silver-gilt Medal for a group containing Cattleya Magali Sander var. Purity, C. Snowdon var. Princess Royal, C. Harold var. Mont Blanc, and excellent Odontoglossums and Odontiodas.

A. Hanmer, Esq., Burbage, Buxton (gr. Mr. W. G. Giles), received a Silver-gilt Medal for a group in which were excellent varieties of Odontoglossum crispum and O. eximium, as well as fine Odontiodas and Cattleyas, several of which obtained Awards.

FIRST-CLASS CERTIFICATES.

Cattleya Magali Sander var. Purity ; C. Snowdon var. Princess Royal ; Odontoglossum violaceum. From S. Gratrix, Esq.

Oncidium Papilio majus; Cattleya Mossiæ var. Olympia ; Odontioda Colinge var. the Baroness. From P. Smith, Esq.

Odontoglossum crispum var. Clara Lindsay. From A. Hanmer, Esq.

Sobralia macranta alba. From F. Hardy, Esq.

AWARDS OF MERIT.

Cattleya Mossiæ var. Alexander Hanmer ; Odontioda Eileen ; Odontoglossum Crion var. Edgemoor; Cypripedium Ellis Needham. From A. Hanmer, Esq.

Odontoglossum lilacinum ; Cattleya Harold var. Mont Blanc. From S. Gratrix, Esq.

Cypripedium Argo-Fairrianum var. elegans ; Odontioda Colinge var. Perfection. From Messrs. Keeling & Sons.

AWARDS OF APPRECIATION—FIRST-CLASS.

Odontoglossum Doreen var. Edgemoor ; Odontoglossum Phyllis ; Odontoglossum amabile var. cœleste ; O. amabile var. Everest ; O. crispo-Solon var. superba ; Odontioda Mrs. Johnson ; Oda. Madeline var. The Nigger. From A. Hanmer, Esq.

Odontoglossum Norvina ; O. Doreen var. violaceum. From Mrs. Gratrix.

Odontioda Joiceyi. From S. Gratrix, Esq.

CULTURAL CERTIFICATES.

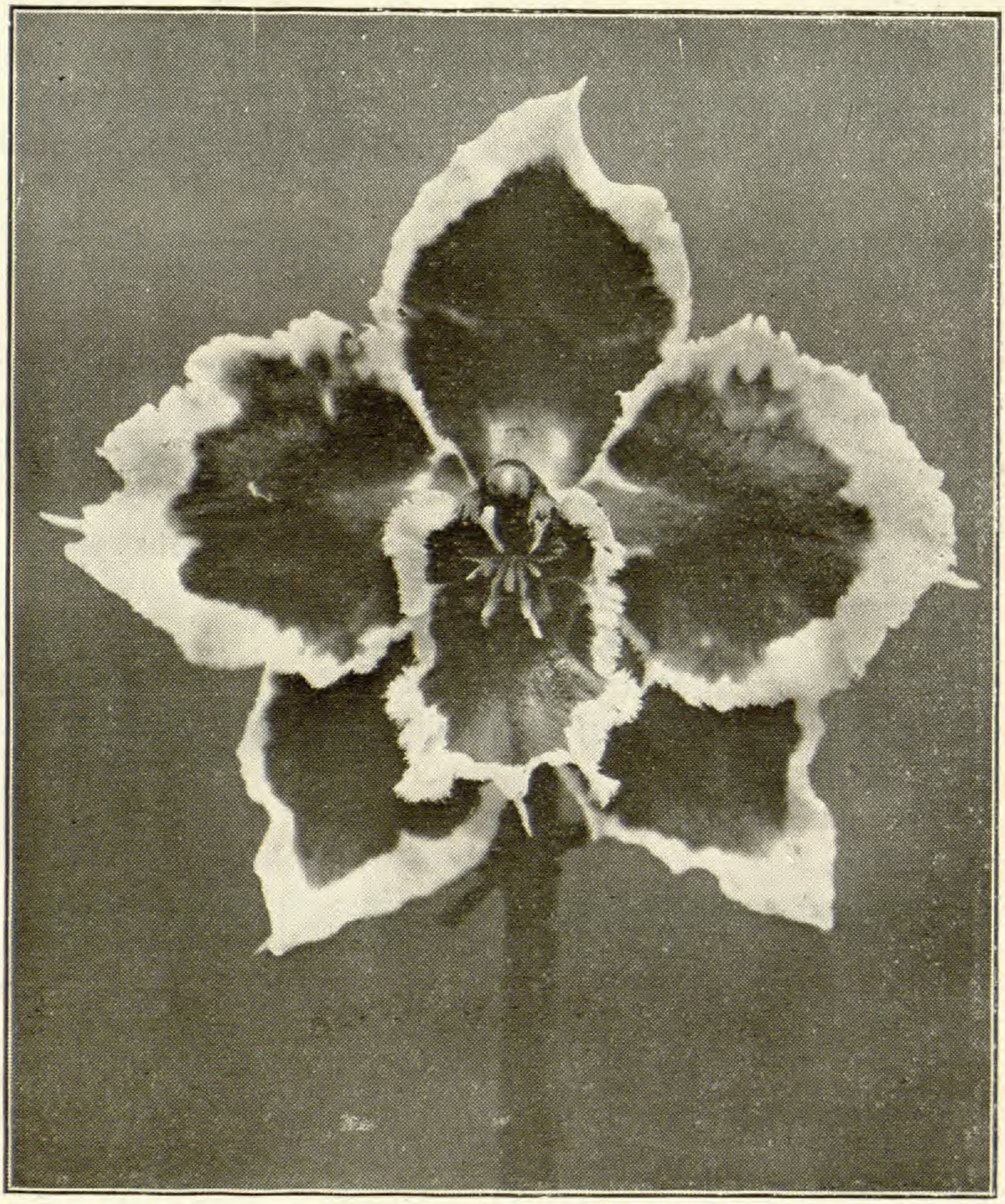
To Mr. W. G. Giles, for Odontoglossum crispum var. Clara Lindsay and Odontioda Eileen.

To Mr. C. Branch, for Sobralia macrantha alba.

To Mr. J. Howes, for Brassocattleya Veitchii.

ODONTOGLOSSUM VICTORY.

OF the many excellent hybrids that have been raised by Messrs. Armstrong & Brown, this is unquestionably one of the best. The large flower has wide sepals, almost orbicular petals, and a labellum that is unusually developed, while all the segments are elegantly blotched with brownish-red. Around the whitish margin there is a suffusion of violet-rose, suggesting the



ODONTOGLOSSUM VICTORY.

inclusion of O. Pescatorei in the parentage, for the same tint is often seen in O. ardentissimum (crispum × Pescatorei). Such a fine result as this would not have been thought possible a few years back, yet progress never ceases, and although one sometimes thinks finality has been reached, Messrs. Armstrong & Brown still create superior flowers.

THE ORCHID REVIEW.

VOL. XXIX.] SEPTEMBER, 1921. [No. 339.

NOTES.

CYPRIPEDIUM STONEI PLATYTÆNIUM.—Referring to our note on p. 37, regarding this plant realising 140 guineas, a correspondent kindly reminds us that at the Lee sale it realised £315, while another friend draws our attention to a newspaper report, which described it as "of almost priceless value, because it has longer whiskers."

GLASGOW ORCHID COLLECTIONS.—Mr. James Whitton, J.P., V.M.H., Director of Parks and Botanic Gardens, Glasgow, attended the meeting of the Royal Horticultural Society, August 9th, and accepted the invitation to sit with the Orchid Committee. In response to the Chairman's welcome, Mr. Whitton said that the Public Parks of Glasgow, now contain some 10,000 Orchids, of which about 200 are Masdevallias. Odontoglossums and Cypripediums are found to be of more use than Cattleyas and Lælias, for the latter are often affected by autumn fogs. The collections prove of considerable interest to the numerous visitors.

ODONTOGLOSSUM PESCATOREI SANDERÆ.—It is somewhat remarkable, that with all the many varieties of O. crispum, there are but few distinct forms of the closely related O. Pescatorei. Of the spotted varieties the best is undoubtedly Veitchii, while the large white forms are not quite so rare. We have just received a spike of O. Pescatorei Sanderæ, which originally appeared in an importation of the species received some years ago by the late Mr. H. A. Tracy. Afterwards it went into Baron Schröder's famous collection at the Dell, and is now among the many fine Orchids possessed by Baron Bruno Schröder, who obtained a First-class Certificate for the plant when exhibited at the Royal Horticultural Society, January 7th, 1913. The flowers are of typical size, the inner parts of the sepals blotched, and of the petals spotted, with cinnamon-brown, the lip is entirely without spotting. This white lip is characteristic of O. Pescatorei, and in the hybrids containing a large share of this species the lip is usually white and pandurate in form.

THUNIA MARSHALLIÆ.—Some of the finest examples yet seen of the beautiful Thunia Marshalliæ were exhibited by Messrs. Sanders, at the Chelsea Show this year. The plants were grown at the hottest end of the Cattleya house, and from the time of repotting and commencement of their cultivation, when the new growth was about an inch in height, until the day of flowering, only nine weeks elapsed. As soon as the last flower had faded, the plants were placed in an airy and cool corridor, in order that they may become thoroughly well-ripened.

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LÆLIOCATTLEYA NANCY.—In the making of this elegant hybrid between Lc. Miss Louise Fowler (C. granulosa × Lc. callistoglossa) and C. Hardyana (C. aurea × C. Warscewiczii) the purple colour has dominated both the yellow and the olive-green, as is usually the result. An examination of the flower gives evidence of all the four species involved. The stiff nature of C. granulosa has made up for the weak petals of C. aurea, the large labellum of C. Warscewiczii (gigas) has created a well-formed lip, and is also responsible for the yellow discs on the sides of the throat, while L. purpurata has added that intensity of colour which it always does when in combination with C. Warscewiczii, a common example of this being Lc. callistoglossa, and, lastly, C. aurea adds the crimson over-tint on the labellum. Lc. Nancy is one of the latest results obtained by Messrs. Hassall & Co., and the four-flowered spike which we have received gives every promise that when the plant is fully grown even finer results will be produced.

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ORCHIDS OF THE CAPE.—Orchids occupy a prominent place in the Cape Flora; the majority are terrestrial and very few of them are in cultivation. A systematic description of them by the late Mr. R. A. Rolfe was published during 1912-13 in *Flora Capensis*. No less than 47 genera are dealt with, and 496 species enumerated. The tribe Ophrydeæ comes first with 32 genera and 358 species, Vandeæ second with 8 genera and 128 species, Epidendreæ third with 3 genera and 6 species, and Neottieæ last with 4 genera and 4 species. Eulophia is the largest genus, having 72 South African species, Disa following with 69. Satyrium has 52 species, Habenaria 37, Dispersis 36, and Holothrix 24. Very few of the species extend into Tropical Africa, and a large number are limited to the south-western region. Seventy new species are described and five genera, the latter being sections of large genera now considered distinct. The limits of the genus Disa were extended by Bolus to include Lindley's genera Monadenia, Herschelia, Forficaria, Penthea and Schizodium, but they have been restored by Rolfe in the *Flora Capensis*

ORCHIDS IN JAPAN.

By Prince TADASHIGE SHIMADZU, Member of the Imperial Orchid Society of Japan.

(Continued from page 36.)

DENDROBIUM AMŒNUM, Lindl.—Imported from Formosa in 1916. Flowers about two inches in diameter, white, strongly scented, resembling that of violets; they are produced from the nodes and clustered two—four in number, keeping very long in perfection. The flowering season is rather variable with me, sometimes in November and December, or March and April, but chiefly between May and July.

DENDROBIUM CRUMENATUM, Swartz.—Imported from Formosa in 1916. I have only one plant, and it is of the dwarf-habited kind. Flowers are white, with five raised yellow keels on the lip, and sweet scented; about five are produced on a terminal spike. It flowered with me for the first time on August 6th, 1919.

DENDROBIUM GRACICAULIS, Hayat.—Imported from Formosa in 1916. The flowers, which are produced from the nodes, are very much like those of D. chrysotoxum, being yellow and scented. Flowers in August.

DENDROBIUM LODDIGESII, Rolfe.—Imported from Formosa in 1916. I found it very difficult to grow, and have no more of it left. Flowered in June with me.

DENDROBIUM MACROPHYLLUM, Richd.—Imported from the Caroline Islands soon after the occupation in 1914. Flowers six in number on a terminal spike. Generally flowers with me in October.

D. MONILIFORME, Swartz.—Found on islands near the south-western part of Japan, as well as on the southern coast of the mainland, and Kyushu, etc. Flowers produced from the nodes, and scented. Some are nearly white, some purple tinted. Blooms in summer.

DENDROBIUM NOBILE VAR. FORMOSANA.—Imported from Formosa in 1916. It resembles D. nobile in many respects, but inferior in every way. Flowers with me between February and August, chiefly in March and April.

DENDROBIUM TOSÆNSE.—From the southern part of Kyushu and Shikoku. Stems about 1½ feet, slender and semi-pendulous. Flowers from the nodes of stems of one and two years old. Six to twelve blooms, about one inch in diameter, dull yellow with six crimson stripes on the lip. Flowers in July with me.

DENDROBIUM UNDULATUM.—From the Caroline Islands. Stems about three feet in length and very stout. Flowers in July and August with me.

ERIA LUCHUENSIS, Yatabe.—From Luchu island. Cool-house Orchid. Stems about eight inches. Spikes pendulous, about six inches, flowers densely carried, white, lip with reddish-brown spots. Flowers with me between July and September.

PHALÆNOPSIS AMABILIS FORMOSA.—Imported from Formosa in 1916. I have not been able to make any distinction between this plant and P. amabilis. Some of these plants have more robust flowers, and in larger numbers than others. Scapes at maximum about 2 feet 6 inches in length. Flowers about ten in number with me, and produced between December and June of the following year, but chiefly between February and April.

RENANTHERA STORIEI.—A Philippine plant. Last year it flowered most beautifully in July. Length of scape 2 feet 8 inches, with five branches, the number of flowers being as many as 109. I am keeping the plant in full sunshine.

STAUROPSIS LISSOCHILOIDES.—A Philippine plant. My specimen does not much exceed 4 feet in height. It flowered in July, with a scape of 4 feet and about 25 flowers.

What I have been trying with my East Indian Orchids, and what I think I have succeeded in, is to give them a climate in summer much resembling their own. By this, I mean that I keep most of my Cypripediums, Dendrobes, Phalænopses, Cymbidiums, Vandas, etc., out of doors from the beginning of June until the beginning of September, leaving them exposed to rain and heat, and, in the case of Dendrobes, etc., to the sun as well. As our climate in summer resembles a tropical Asiatic one we can, no doubt, grow some of our Orchids far better in that way.

There are many more native plants in Japan, but I think I have given enough to make it clear what sort of plants we have and what we are doing, so I will now close, after thanking Mr. Gurney Wilson for so kindly asking me to contribute something to the *Orchid Review*.

LÆLIOCATTLEYA MINOS.—This is the result of crossing Lc. rubens (L. pumila × C. Hardyana), with C. Tityus (C. Enid × C. Octave Doin). It is the experience of all raisers of hybrids that two fine parents do not often make fine seedlings. Here we have one of the few cases in which the flower may be considered equal to those of its parents, both of which were excellent varieties. The distinctive quality of Lc. Minos lies in the beautifully arranged tints of purple seen in all the segments. The sepals, and the broader petals, have the apical areas mottled with purple equal in intensity to that of the labellum, although, of course, not covering so large an area as in the latter organ. The petals are rose-purple, but rendered attractively pretty by the venation being almost white, and the edge neatly crisped. If other seedlings from this batch turn out as well as the flower above described, then Messrs. Hassall & Co. will have added more gems to this popular section of warm-house Orchids.

STANHOPEA TIGRINA.

SEVERAL remarkable Orchids are cultivated by Dr. Fred. Bedford, Dovercourt, Fulford, York, and although the collection is not as yet one of the first magnitude, it contains, nevertheless, plants that possess considerable historic interest. It has recently been our pleasure to receive a flower of Stanhopea tigrina superba, so fine that it is one of the few present day instances in which the term superba has been correctly applied. Even magnifica would not be out of place for so grand a flower.

S. tigrina appears to have been known in the 17th century, but it did not flower in England until 1837, having been introduced by Messrs. Low & Co, through their collector, Henchman. In 1843 Lindley found that the number of species of Stanhopea had greatly increased, and opportunities of examining them in a living state having occurred, it was desirable that the genus should be reconsidered for the sake of defining the species with more exactness. Consequently he described a dozen (*Bot. Reg.* 1843, *sub. t.* 44), and added the names of several others that were mentioned in Loddiges' catalogue, but unknown to him. S. tigrina was placed by Lindley in a section distinguished by the apex of the labellum being three-toothed. It was described as much the finest of the genus, the excessively broad column and the radiating toothed lamellae within the cavity of the lip being peculiar characters.

In 1852, Lindley published the first part of his *Folia Orchidacea*, in which twenty species of Stanhopea are enumerated. He therein states: "The species of this genus are almost all known from garden specimens, the fleshiness of their flowers rendering their determination in herbaria extremely difficult. Hence their native countries have been often incorrectly stated. They vary greatly in the colours and a little in the forms of their flowers. The botanist will find safe characters in the hypochile or lower cavity of the labellum, the mesochile or middle part from which horns usually proceed, and the epichile or front lobe."

Two very distinct varieties of S. tigrina have been described, although it is doubtful if these particular plants are still in existence. The first is variety nigro-violacea, in which the whole flower was deep brown-purple, except the edges of the sepals and petals and the upper half of the lip. The second variety is lutescens, described as very fine, with the flowers brilliant yellow, inclining to orange, and barred with deep chocolate.

Stanhopeas are natives of Tropical America, and the genus takes its name from Earl Stanhope, at one time President of the Medico-Botanical Society of London. They are best cultivated in baskets, so constructed that the pendulous spikes may push their way through the bottom and sides. When well cultivated they make a most attractive sight by reason

of their strange, yet wonderfully constructed flowers. It is a great pity that Stanhopeas have become so scarce in cultivation, and those amateurs who do possess good plants and varieties have indeed something to be proud of. The strong aroma of S. tigrina has been likened to a mixture of Melon and Vanilla.

CATASETUM FIMBRIATUM.

AT the Meeting of the Manchester Orchid Society, July 21st, a Botanical Certificate was awarded to Dr. Fred. Bedford, of Fulford, York, for Catasetum fimbriatum, Dovercourt variety. This species varies somewhat in the colour of the lip from deep yellow to green. In 1889 the variety platypterum was described as having the lip garlic green, but the Dovercourt plant has this organ of yellowish green, while the flowers, which were male on this occasion, are of good size and substance.

Catasetum fimbriatum was originally described by E. Morren, in 1848, from a plant which flowered in the collection of M. L. de Hamis, of Antwerp. It was exhibited at one of the Belgium shows in September of that year, and was awarded a Gold Medal. No less than 50,000 people, it is recorded, admired the plant during the three days it was on view.

It was not until 1891 that female flowers were first noticed, the event taking place in the collection of Mr. W. J. Wright, of Denmark Hill. This plant was exhibited at the Meeting of the Royal Horticultural Society on September 5th, the inflorescence carrying two male and two female flowers. In 1912, C. fimbriatum flowered with Messrs. Charlesworth & Co., the inflorescence being of special interest, for it carried both a male and female flower, as well as a third bloom in an intermediate state.

Mr. H. Gurney Aggs came across C. fimbriatum when on his way in South America to the great and little heard of waterfall of the Iguazu, which is a tributary of the Parana, and about 1,000 miles from its mouth. It was in the month of May, the cold wet mist was still very thick, everything being dripping wet in the forest, and it was not till between seven and eight that the sun had cleared it away, and then at mid-day it was as hot as our early summer.

THE LATE MR. S. Y. DUNLOP.—We much regret to hear of the death of Mr. S. Y. Dunlop, who cultivated Orchids near Soekaboemi, Java. He was an enthusiastic amateur, and paid a visit to England a few years back. A note on his collection appeared on p. 39 of our last issue.

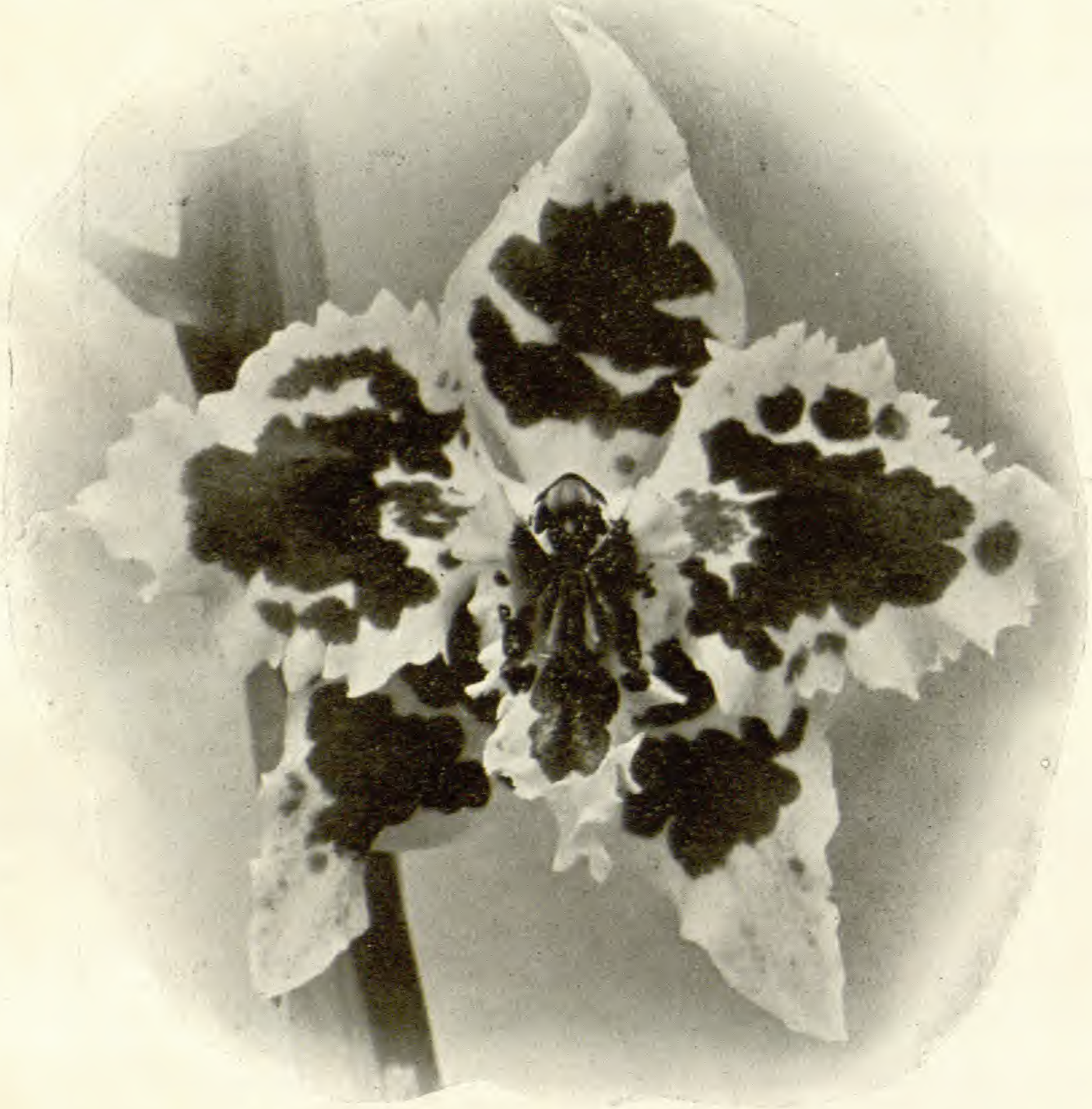
THE ROSSLYN COLLECTION : STAMFORD HILL, LONDON.

JUST 32 years ago, a few Cattleya flowers were presented to Mr. H. T. Pitt, with the message that he could grow Orchids in his garden at Stamford Hill. From that day a continuous stream of additions has made the Rosslyn Collection celebrated throughout the Orchid world. Mr. Pitt's beautiful garden of several acres. recalls the time when the suburbs of London enjoyed a cleaner atmosphere than exists to-day, yet in spite of

H. T. PITT, ESQ.

being only four miles from the centre of one of the busiest cities, his glass-houses amply prove that Orchids can be cultivated with every measure of success under the most trying atmospheric conditions. Owing to the poor quality of the coal consumed last winter, there was an increased quantity of soot, which frequently darkened the glass and made much work in keeping things clean. The plants this summer seem even better than ever, probably in some measure due to the fine spell of sunshine, but very largely the result of the care bestowed upon them by Mr. Thurgood, who has looked after their cultural requirements during the past 23 years.

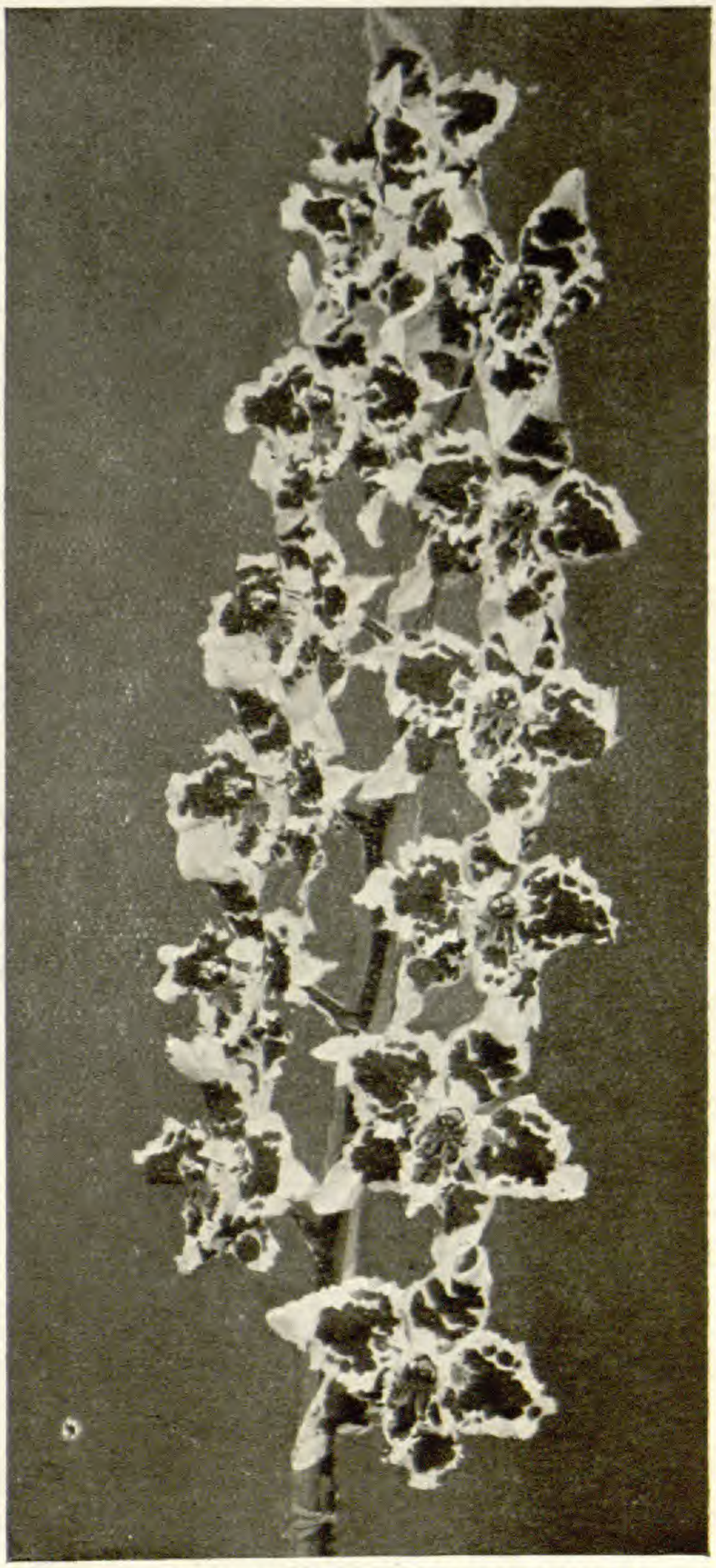
When the interest in Odontoglossums was at its height, some few years back, it was Mr. H. T. Pitt who lead the way and encouraged others to cultivate many of the finest varieties. In 1903, Odontoglossum crispum F. K. Sander, was purchased for the large sum of £1,500, and within a few days an offer of £100 for the pollen from a single flower of it was refused by Mr. Pitt. In 1906 one bulb of this plant was disposed of for 800 guineas. For many years to come there will be remembrances of a remarkable sale of



ODONTOGLOSSUM CRISPUM PITTIANUM.

duplicates from the Rosslyn collection in March, 1906. The record price of 1,150 guineas was obtained for O. crispum Pittianum, the plant consisting of three bulbs. Our illustrations of this famous variety show the full spike of 13 flowers and an individual flower from the lower portion of the spike. That such a truly grand flower should be produced without any disbudding is evidence of the extraordinary merit of this unique plant. It is one of the few Orchids to which a Gold Medal has been awarded. At the same sale 470 guineas was obtained for O. crispum Abner Hassall, 400 guineas for O. crispum Pittiæ, and 290 guineas for O. crispum Persimmon.

All the houses are well provided with heating apparatus, hence many of the tropical Orchids not only grow unusually well, but apparently succeed even better than in their native home. Superb plants are to be seen of Bulbophyllum barbigerum, whose fragile lip is continually in motion, of B. tremulum, with a lip that is often on the tremble, of the extraordinary B. Ericssonii, and of the large-flowering B. grandiflorum. The closely allied genus Cirrhopetalum is represented, among others, by the pretty C. picturatum and the elegant C. Rothschildianum, while suspended overhead in pans are some remarkably fine plants of the Philippine Platyclinis filiformis, one of which carried just 100 pendulous spikes, on each of which there were from 70 to 130 small golden-yellow flowers, making a grand total of at least 10,000 blooms. No wonder they were admired by thousands of visitors when exhibited at one of the great London Shows.



ODONTOGLOSSUM CRISPUM PITTIANUM.

Both kinds of albino varieties are to be seen in many examples. In the one that is truly white there are fine plants of the scarce Aërides odoratum album, as well as Epidendrum arachnoglossum album, with its tall reed-like stems and white spider-form flowers. In the other kinds there are many greenish-flowered plants that have lost the purple pigment. They include the choice novelty Cypripedium Enchantress, with mottled foliage, many plants of C. Curtisii Sanderæ, C. Maudiæ and C. Lawrenceanum Hyeanum. It is pleasing to note a flowering plant of the scarce Paphinia cristata, also of Cirrhæa viridipurpurea, and Acropera Loddigesii, with its pendulous

spike of curious flowers. Angræcums comprise fine plants of A. eburnum with its wax-like flowers, of A. sesquipedale, the finest representative of the genus, of A. gracilipes, and A. Leonis. There are some remarkably fine plants of Cœlogyne pandurata, of C. Lawrenceana, with six new growths, of C. Sanderæ and C. Dayana.

Growing under a roof-span are numerous choice Cypripediums, and one cannot help noticing the vigorous nature of C. Forest King, C. Alcibiades, C. Hannibal, C. Shogun, C. Our King, and C. Britain's King. One of the Cypripediums most prized by Mr. Pitt is C. Moonbeam, with its charming coloration. There are hundreds upon hundreds of other Cypripediums, and a special article might be written upon them during their flowering season in the autumn.

Of the many wonders in the world of Orchids, few plants can equal the members of the Cycnoches genus. The Rosslyn collection contains many examples of C. Egertonianum, C. chlorochilon, etc., as well as good plants of Catasetum Bungerothii, C. fimbriatum, Stanhopea saccata, Gongora quinquenervis, and numerous others that are far more interesting to examine in reality than to read of in print. A reminder of olden-day collections consists of several stately plants of Vanda suavis, V. tricolor, and an immense plant of V. Batemannii, also known as Stauropsis lissochiloides ; it stands several feet in height, and is clothed with numerous leathery leaves about two feet in length. No difficulty is attached to the cultivation of Neomoorea irrorata, the three large plants look a picture of good health, while the surface of the compost bristles with new roots that have apparently come to the surface in search of a more abundant supply of air.

Lælia monophylla succeeds well, no less than 17 flower spikes were produced this year on one of the plants. It is grown in a cool atmosphere. L. acuminata and some fine plants of Trichopilia marginata and T. Backhouseana are worthy of mention. This collection coatains no less than four plants of Odontoglossum Londesboroughianum, a scarce Mexican species, also a plant of the Mexican Arpophyllum giganteum, which, although apparently in good health, does not produce any flowers at Stamford Hill. Of the many Epidendrums, that known as gattonense is considered the prettiest of all. E. Wallisii carried a seed pod four months old, yet the flower is still in existence and of yellow colour. E. Endresii and E. Endresio-Wallisii, both very scarce, are, however, well represented here, as also in E. xanthinum and many of the best hybrids in this genus.

Masdevallias delight in a cool and shady position, and on that account are well suited for cultivation in large towns, or where there is a deficiency of light. In this garden one may find almost all the best known species and varieties looking quite content and happy. They cannot be left before

admiring M. muscosa, with its wonderful lip so constructed that whenever an insect alights upon it an upward movement occurs and imprisons the visitor. After a time the lip falls back into its original position, only to repeat the movement when another fly arrives.

Maxillarias seem to have fallen out of cultivation during the last few years, but Mr. Pitt always admires M. sanguinea and M. tenuifolia. He is fond of handling a well-grown plant, and with just pride likes to show them to his friends. There are few plants of Miltonia Phalænopsis that equal the one grown here. Eulophiella Elisabethæ has been over 20 years in the collection, and many others have only a few less to their credit. How many growers are successful with Lælia Jongheana? Yet here is a plant that obtained an Award of Merit 21 years ago.

Odontoglossums have long made the Rosslyn collection famous throughout the world. All the best known blotched varieties of O. crispum can be seen both in large and small plants, the latter being recently propagated pieces. In addition to those previously mentioned, there are the following varieties of O. crispum:—Lindenii, Lucianii, Carpartianum, Ashworthianum, and Fearnley Sander. At the end of one of the Cool houses may be seen most of the Mexican Odontoglossums, including several plants of O. Duviverianum, O. nebulosum, O. cordatum, O. Humeanum, and O. aspersum. Also O. bictonense album and O. Uro-Skinneri album. A very free-flowering species is O. aspidorhinum, of which five good plants are nearly always in bloom. In a corner of one of the hot houses are the Phalænopses, and they look uncommonly well. All the plants root very freely. They include P. Lueddemanniana, P. Stuartiana, P. Esmeralda, and P. amabilis. Alongside is the rare Vanda Sanderiana, a plant that never seems at home in the English climate.

The Dendrobium house is filled with species and the best hybrids. D. Dalhousieanum is freely propagated by removing the young plants that form on the upper portion of the old stems. Plants so obtained are found to be healthier and better growers. In other houses are grown numerous Cymbidiums, not forgetting Pitt's variety of Low-grinum, some of the best Zygopetalums, Oncidium Leopoldii, always distinct on account of the long rhizome that separates the bulbs, and a strong specimen of Peristeria elata.

On entering the Cattleya house one is astonished at the quantity and variety of the plants. A whole chapter could be written on the species alone, and still another on the hybrids. C. Hardyana continues to be much valued, especially the varieties having white sepals and petals. Then there is the elegant C. Iris var. His Majesty, not yet equalled, also the best varieties of Lc. Ophir, Lc. Golden Goblet, Lc. Golden Crest, and Lc. Cloth of Gold, all producing golden-yellow flowers. Many albino Cattleyas, of which we may mention C. Cowaniæ alba, several Brassocattleyas, including

the varieties Wm. Pitt and Mrs. Pitt, as well as Bc. Cliftonii, are fine examples of cultivation. The same remark applies to Lc. St. Gothard and some interesting hybrids between C. Eldorado alba and C. gigas F. M. Beyrodt. Perhaps the finest plant in this house is C. Ariel, a beautiful hybrid between Bowringiana and Gaskelliana.

An idea of the extent to which some of the more interesting species are cultivated may be gained from the fact that there are as many as 30 plants of Chondrorhyncha Chestertonii. Another of Mr. Pitt's little favourites is Kefersteinia laminata. Of the richly-coloured Sophronitis hybrids there are representatives of all sections, including some of the very best yet raised. Miltonias and their hybrids are frequently in bloom, and it is only a short time back in the current year that a First-class Certificate was awarded to Miltonia Venus. Of all the plants that have been imported of Odontoglossum grande there has never been one more distinct than Pitt's variety, and it is pleasing to see upwards of half-a-dozen plants doing well in a corner of one of the spacious houses.

The last house is devoted to Odontoglossums, and in it are cultivated a most representative collection of present-day hybrids. Of these there are fine plants of O. waltoniense, O. Ossulstonii, carrying two seed pods, a good batch of O. Zena, raised at Rosslyn, the fine O. Mauretania, O. Pembury, with a very strong flower spike, O. Wilckeanum Pittianum, one of the handsomest forms of this natural hybrid, the singular O. crispum solum, O.c. Magnum Bonum, O.c. The Marquis, and rare O. coronarium, a large batch of O. Edwardii hybrids, and the seldom seen Oncidium insculptum.

All through the war, when many other cultivators took a lesser interest in their plants, Mr. H. T. Pitt never slackened his keen admiration for these beautiful flowers, and scarcely a week went by that did not see some addition being made to his already extensive collection. Almost needless to say, numerous Medals and high Awards have been bestowed upon exhibits from the Rosslyn collection. And although Mr. Pitt rarely grumbles when a plant fails to receive its just reward, he is never more pleased than when other experts grant the prize which he, as a long experienced amateur, knows the plant is worth. It was to Mr. H. T. Pitt, of Rosslyn, Stamford Hill, one of our oldest and most enthusiastic Orchidists, that the twenty-eighth volume of the *Orchid Review* was cordially dedicated. As one of the most frequent exhibitors at the Meetings of the Royal Horticultural Society, Mr. H. T. Pitt's plants have been admired by a multitude of enthusiasts, and his reputation as one of the principal amateurs is not only great in England, but it extends to every part of the world where the highest art of horticulture is appreciated. In point of variety and in the number of rare species, the Rosslyn collection has perhaps only been equalled by the splendid assemblage of plants formed by the late Sir Trevor Lawrence, Bart.

LÆLIOCATTLEYA GENERAL MAUDE.

THE time has long since past when hybridists made crosses with little or no thought as to the particular characteristics of the flowers. Good Orchids of to-day must be something beyond mere hybrids. They must conform to certain recognised conditions, and of these the shape of the

LÆLIOCATTLEYA GENERAL MAUDE VAR. RUBENS—AWARD OF MERIT, R.H.S., JULY 26TH, 1921.

segments is of greater importance than size alone. Many of the Cattleya Mossiæ hybrids yield large flowers, but their weak point lies in the drooping nature of the petals. Lælia purpurata gives hybrids of good constitution, and with dark labellums, but here, again, the petals are very deficient in size and substance. There is, however a small plant that produces flowers having comparatively large petals of thick texture and of good width. This is Lælia pumila, and its full value is now being recognised as of great importance in the production of model-shaped flowers. One of the best of the early attempts may be seen in Lc. rubens (L. pumila × C. Hardyana), in which the Lælia parent very much improves the formation of the

C. Hardyana petals. In Lc. General Maude we have the result of crossing Lc. rubens with C. Hardyana, thus utilising this latter plant for the second time, and producing a flower that may be termed a good C. Hardyana improved by the addition of L. pumila. Our illustration shows the fine variety of this novelty that obtained an Award of Merit at the Royal Horticultural Society, July 26th, 1921, when exhibited by H. T. Pitt, Esq., of Stamford Hill. The flower measured about seven inches across.

PAPHINIA CRISTATA.—A plant of this rare and singular species has recently been in flower in the collection of H. T. Pitt, Esq., at Stamford Hill, London, where it is cultivated in a shallow pan suspended from one of the rafters. Some 60 years ago it was said to require a peculiar treatment to grow it well, and this read as follows:—"Take a wide, shallow pot, drain it well, then have ready a number of square-cut pieces of fibrous peat; with these form a wall, as it were, on the margin of the pot, and fill in the inside with rough peat and sphagnum moss; then place round a second layer of the square pieces, drawing them a little inwards, and fill up again with the compost. Proceed so till the space at the top is just large enough to hold the plant; then place it on it, and fix it there with more square blocks of peat. It will then stand upon, as it were, a pyramid of peat, and will soon grow quickly and flower freely.

ORCHIS LATIFOLIA.—The *Journal of Botany*, Jan., 1921, contains an article on Orchis latifolia in Britain, by Rev. T. Stephenson, D.D., and Mr. T. A. Stephenson, M.Sc. The characters by which O. latifolia may be roughly distinguished from other forms are given, also the definitions of the four main groups with two sub-groups into which these forms can easily be arranged. By way of summary, the authors say: "That the view which our present knowledge suggests to us is that O. latifolia is a true species, and that a truly typical specimen of it cannot be confounded with any other species or with first-generation hybrids; but that it is extremely variable—some of the forms resembling no other species, some verging more towards O. prætermissa and some towards O maculata, but at the same time not in any sense identical with these species." Since the above article was completed, the authors state that "Dr. Druce has published a long and interesting note, in which he combats, as we think quite successfully, Mr. Rolfe's contention that O. prætermissa is the true O. latifolia. Col. Godfery has also written strongly urging the recognition of O. latifolia as a valid species. In this and his preceding article (*Journ. Bot.*, 1919, 137-142), Col. Godfery has produced ample evidence of the occurrence of a *pure* O. latifolia on the Continent. It is practically certain that British plants precisely similar to these belong to the same species."

VANDA SANDERIANA.

THE illustration below represents a magnificent specimen of Vanda Sanderiana, which was exhibited by Messrs. Sander & Sons, St. Albans, at the R.H.S. meeting held on September 28th, 1915, and to which

VANDA SANDERIANA (LINDLEY MEDAL PLANT).

the Lindley Medal was awarded in recognition of its excellent culture. It had been grown from a dwarf imported piece into a sturdy specimen with four growths. When exhibited, the plant bore six strong spikes and an aggregate of 42 flowers, while a seventh spike was pushing up.

DENDROBIUM CYMBIDIOIDES AND D. TRIFLORUM.

A FINE plant of Dendrobium Cymbidioides that has recently been in flower with Messrs. Sanders recalls the fact that there are two allied plants in cultivation under the same name. They belong to the section Sarcopodium, which is characterised by having diphyllous pseudo-bulbs.

D. Cymbidioides appeared in cultivation about fifty years ago, and was figured in the *Botanical Magazine* (t. 4755), when its history was given as follows:—" A plant very little known, either in our gardens or herbaria, of which we received living specimens from Messrs. Rollison, of the Tooting Nursery, without any name. It proves to be the Desmotrichum Cymbidioides of Blume, native of the lofty wooded mountains of Gede and Salak in Java, a genus of that author of which all the species have, we think with propriety, by Dr. Lindley, been incorporated with or restored to Dendrobium. Dr. Lindley had indeed seen no specimens; but drawings of this were sent to him by Professor Reinwardt, and of closely allied species, Desmotrichum triflorum, ' scarcely differing from this, but in its uniformly tetragonal pseudo-bulbs and cream-coloured flowers always appearing in threes. A figure of the species also appears in Miquel's *Choix des Plantes*.

D. triflorum has remained an almost unknown species down to the present time, but on comparing the plants sent to Kew by Sir Fred. Moore, Mr. Rolfe found that one of them agreed with the drawing sent by Reinwardt to Lindley, except as to the number of flowers, and also that it is the D. Cymbidioides of most gardens, having been twice figured as such (*Gard. Chron.*, 1896, i. p. 581, fig. 90; and *Cogn. Dict. Orch.*, Dendrob., t. 17), and that it had been in cultivation since at least 1889, when it flowered both with Mr. Moore and with M. Van Imshoot, at Ghent. The latter stated that he had received it from Mr. Witte, of Leyden, under the name of "Cœlogyne ocellata var., Java," but whether this represents its original introduction is, of course, uncertain.

The differences between the two plants are very marked. D. Cymbidioides has short elliptical leaves, greenish yellow sepals and petals, and the lip nearly white, with about four dull purple stripes on the side lobes, and the front lobe broadly ovate, with a bright yellow area at its base and in front of the crest. D. triflorum has oblong, much longer and narrower leaves, much narrower straw yellow sepals and petals, the side lobes of the lip almost wholly dull purple, and the front lobe much longer and narrower. The crests are also quite different in the two plants. They are both handsome species, with very little of the appearance of Dendrobium. The flowers resemble those of a Cymbidium, hence the specific name Cymbidioides. D. triflorum is not so well named, for the flowers on a raceme vary in number from two to six.

PHAIUS BLUMEI.

THERE is a peculiarity about Phaius Blumei that oftentimes spoils its attractiveness, for some of the flowers become self-fertilised before they expand. Regarding P. Blumei var. Bernaysii, which has sulphur-yellow flowers, Messrs. Veitch state in their Manual :—" It is of little value as a horticultural plant on account of the flowers being often self-fertilising before they expand, and thence lasting but a short time in perfection." But in 1904 the Bernaysii variety flowered well in the Kew collection, all the blooms opened perfectly, so this peculiarity is by no means certain. Cleistogamous, or self-fertilising, flowers may be regarded as arrested formations, in which, however, the sexual organs reach maturity.

Further light on the subject is obtained from the observations of Mr. H. O. Forbes (*Jnr. Linn. Soc. XXI. p.* 538), who spent some time on the West Javan hills, where he had execellent opportunities for studying the fertilization of the Orchids growing in the vicinity. Of Phaius Blumei he examined more than 150 flowers, but did not find one that was not self-fertilized. They were found in two forms, slightly but interestingly different. In the one, the rostellum was a well developed projection ; in the other, of which there were many more examples, there was no rostellum, although the boundaries of the stigma were quite distinct.

Regarding the first form, that having the rostellum, Mr. Forbes states :—" On examining an advanced bud, the viscid matter of the stigma is seen to be in large quantity and rather liquid, and as it grows the amount of viscid matter becomes greater and greater till it overflows the stigma—often before the bud opens ; and immediately on its opening inundates the pollinia, which now increase in size and emit their tubes over the narrower portion of the rostellum into the stylary gland. Very often, however, both anther and stigma are quite filled up by the multitude of pollen-tubes and by the swollen pollinia. All these plants produced large and well-filled seed-capsules on every flower. During all my observations I have never seen an insect visit the plants.

Of the second form of flower, in which the rostellum was absent, Mr. Forbes remarks :—" As the flower grows, the anther ruptures and rotates forward, and when it has described about 90° it occupies the position which, if it possessed a rostellum, it would naturally retain ; but having none, it continues to rotate through about 70° more till it comes in contact with the face of the column, that is with the stigmatic cavity, which is full of viscid matter. The whole surface of the lower four pollinia come into contact with the viscid matter, and sink well into it ; and this viscid matter finds its way gradually into the whole anther. The inundated pollinia have no obstacles to bar the way of their tubes to the ovary. When

fertilization has taken place, the flowers close up, nnd by continued vertical rotation turn their heads towards the earth. Large seed-capsules were produced by every flower of this form. In many instances I have found as many as three supernumerary anthers on the top of the column."

Mr. Forbes' first acquaintance with P. Blumei was with a specimen that had been under cultivation for about a year. It was for some time uncertain whether these peculiarities were not the result of cultivation, but he subsequently found numerous examples in a state of nature presenting the same appearance in every respect.

"Here, then," concludes Mr. Forbes, "we have an Orchid presenting every attraction to insects to pay the flower, at least, a first visit (when they would find no nectar), a large showy flower, with some perfume which is not disagreeable, a distinct nectary, an attractive labellum embracing the column, yet self-fertilized, and rarely, if ever, anything else."

CYPRIPEDIUM BELLATULUM.—During the past summer Messrs. Sanders received a small consignment of Cypripedium bellatulum, consisting of about 70 plants, and these after remaining on the staging for some four weeks, were roughly potted and placed in one of the warm houses, where after a period of about four more weeks, they are now all in full flower. One can only suggest that the plants were either well advanced in the bud state before being collected, or else the shock brought about by the long journey has caused them to bloom prematurely.

SERAPICAMPTIS FORBESII.—Under this name Col. M. J. Godfery, F.L.S., describes in the *Journal of Botany*, 1921, p. 57, with an accompanying figure, a new hybrid Orchid between Serapias lingua and Anacamptis pyramidalis. The specimen was found on May 5th, 1920, at Bordighera, Italy, and was received from Col. A. M. Forbes, who wrote:—"The Orchids growing near it in quantities were A. pyramidalis and S. lingua, with one small group of S. longipetala about 40 yards away. We have never seen a specimen of O. laxiflora in that neighbourhood (though there are some at the mouth of the Nervia), nor of O. papilionacea, which we have never found yet. My wife thoroughly searched the locality where she found it, but could not find any other specimen, but there was one O. tridentata on a lower olive-terrace." Although there is but little direct evidence of A. pyramidalis, Col. M. J. Godfery refers in detail to the most salient features of that species, which include the long spur, the guiding-plates on the lip, and the saddle-shaped viscid disc. Other points that afford confirmatory evidence are also given. The colour of the lip is a peculiarly bright crimson, almost impossible to produce, reminding one of the brilliancy of the most vividly-coloured specimens of A. pyramidalis on the Riviera.

GRAMMATOPHYLLUM SPECIOSUM.

A GIANT Orchid, indeed, is Grammatophyllum speciosum, for a specimen brought down from Malacca to Singapore weighed, with the portion of the tree on which it grew, three quarters of a ton. It is usually to be seen growing on trees at no great height from the ground, frequently near streams, but when the tree has fallen it continues to flourish and grow well on the ground. At Peradeniya it was always treated as an epiphyte until 1896, when it was removed to a specially prepared mound of turf, decayed manure, charcoal, broken bricks and laterite stones, with the result that it flowered well twelve months later. In 1907, this plant consisted of about 70 stems pseudo-bulbs, each bearing a hundred or more ribbon-like leaves from 20 to 30 inches long. No less than 26 racemes were produced, each bearing upwards of 100 flowers. Thus this wonderful plant carried nearly 3,000 flowers.

A photograph of the above specimen is reproduced in the *Gardeners' Chronicle*, August 31st, 1907, with an accompanying note from Mr. Hugh A. MacMillan, the curator of the Botanical Gardens, Peradeniya, who remarks: "It is obviously a great effort on the part of the plant to produce at one time so enormous a crop, and it is not surprising that the specimen does not repeat the process every year. From the first appearance of the spikes above ground to the visible setting of the first fruit occupies about four months, and two months more are required to ripen the stout pod-like fruits. The minute, brown seeds are produced in great quantity, but hitherto these have not found at Peradeniya conditions necessary to their germination, even though afforded artificial aid."

In 1893, Messrs. Sanders presented a fine plant to Kew. It flowered well in the autumn of 1907, and is described in the *Gardeners' Chronicle*, October 12th, 1907, by Mr. C. P. Raffill, who states: "The plant is growing on a raft, on a mound of compost consisting chiefly of peat, moss and sand. In previous years the practice has been to lower the base of the compost into the Lily tank to a depth of 4 to 5 inches during the summer months, and to raise the plant again for the winter. This spring the plant was kept out of the water altogether, and only given water when the compost showed signs of becoming dry. It is interesting to record the fact that formerly during the summer months, when the plant was kept very wet at the roots by partial submersion, aerial, spiny roots were produced in such numbers as to completely cover the surface of the compost. Very few, on the contrary, have been produced this season, those which have been formed arising very near the bottom, and consequently the wettest part of the ball. In the Peradeniya Gardens, where this species is grown as an ordinary terrestrial plant, these erect, aerial roots are not produced at all

freely, and the plant seems to have become so accustomed to the terrestrial mode of life that it has gradually lost the habit of producing the aerial roots which are invariably present when the plant is growing under the conditions of an epiphyte. This leads one to the conclusion that the conditions which are necessary to cause this plant to form these peculiar roots are directly opposed to those which are necessary to cause the plant to flower."

In 1907, Grammatophyllum speciosum flowered in the collection of Sir Trevor Lawrence, and the spike weighed, after it had been cut for more than two days, 1¾lbs, and then forty out of an aggregate of seventy flowers had been removed. One flower with its pedicel weighed exactly a quarter of an ounce, so that the total weight of the fully developed inflorescence would have been over two pounds. Near the base of the spike were two abnormal flowers, having only two sepals and two petals, an abnormality that occurs in several other species. In the above example there was an interval of 3 feet 2 inches between the last imperfect flower and the first perfect one. The inflorescence developed rapidly, and was observed to elongate as much as 6 inches in 24 hours.

The individual flowers measure from five to six inches across, and are yellow, spotted with purple or chocolate. They have been closely studied by Mr. H. N. Ridley, when director of the Gardens and Forest Department, Singapore, who in a paper on the Orchideæ of the Malay Peninsula (*Jnr. Linn. Soc.*, vol. xxxii.), remarks: "Each flower remains open for a few days without any alteration unless fertilised, when, although it is still unwithered, a change takes place which prevents its ever being fertilised. The apex of the column begins to turn over towards the stigma, pressing down the rostellum and pushing aside the side lobes. The disc of the pollen and the anther become black and show signs of decay. The red spots on the upper part of the column become paler, and the whole column more greenish coloured. The lip becomes duller and withers. In a few days the apex of the column is coiled up almost into the stigma, pressing the pollinia into the stigmatic mouth. Then the whole flower commences to droop and wither. I believe that there is actual growth of the column apex, and this is borne out by the alteration in form of the spots on the upper part of the column, which appear to lengthen as the column curves over. Removal of the pollinia does not arrest this growth. The same growth takes place after fertilisation, but much more rapidly. On November 27th, at 11 a.m., I fertilised two flowers with the pollen of each other. Next day, at 8.30 a.m., the column was distinctly curved over and nearly concealed the stigma, and by noon the curving into the stigma was complete. All the flowers I fertilised set fruit, but those which were not so treated never did so, although their own pollen was pushed into the stigma by the incurving of the column. Cross-fertilisation is absolutely necessary, and that within a

few days after the flower opens. Accidental self-impregnation destroys the flower by setting up at once the growth of the column, which almost immediately prevents any possibility of any cross-fertilisation by covering the stigma, and is itself incapable of producing fertilisation. The advantage of the incurving of the column after fertilisation is obvious; for if, as often happens, the pollinia are not placed exactly on the stigmatic surface, the apex of the column forces them well into the stigma and covers them up. At the same time, the action in the unfertilised plant is absolutely injurious, for thereby the flower is rendered unable to set seed long before it is withered."

Grammatophyllum speciosum, the original species of the genus, was described by Blume in 1825, as a giant Orchid found on trees in the neighbourhood of Buitenzorg, Java. Messrs. Loddiges, of Hackney, first flowered it in Europe in 1852, and seven years later it flowered with Mr. E. G. Farmer, of Ewell, the event causing Sir William Hooker to remark: "From its vigorous vegetation, and the remarkable size of the flowers, it richly merits the title of the Queen of Orchidaceous Plants."

EPIPACTIS VIRIDIFLORA.—During the summer of 1920 Mr. C. E. Salmon, F.L.S., had the opportunity of examining a large number of living plants of an Epipactis, which, he says, can only be placed under the above name. In an article concerning these plants which Mr. Salmon contributed to the *Journal of Botany*, Jan., 1921, it is stated: "As regards the reproductive organs, it was clear that the rostellum was, for all practical purposes, useless, as in no case could one extract the pollinia upon the point of a pencil as can be done so readily in the case of E. latifolia. Self-fertilisation was a certainty."

OPHRYS CRANBROOKEANA.—A new hybrid between O. arachnitiformis and O. scolopax is described in the *Journal of Botany*, 1921, p. 59, by Col. M. J. Godfery, F.L.S., who states:—"I gathered this plant on April 19th, 1920, in a wood near Hyères, France, under the impression that it was O. arachnitiformis, which in general apprearance it much resembled, but the deeply-cut lip, with its forward-projecting conical side-lobes, so marked a character of O. scolopax, left no doubt as to the parentage of that species. It is not often that one finds a hybrid in which the evidence as to both parents is so clear. Both parents grow in the wood in some numbers. I have named this plant after the Countess of Cranbrook." An accompanying plate depicts a ten-flowered inflorescence.

CULTURAL NOTES.

By H. G. ALEXANDER, Orchid Grower to Lt.-Col. Sir GEORGE HOLFORD, K.C.V.O., Westonbirt.

ODONTOGLOSSUMS.—The late summer and early autumn is generally regarded as the best season to undertake any necessary potting operations of the plants, both species and hybrids, of this genus: also the hybrid families of Odontiodas, Odontonias and Miltoniodas; the longer and cooler nights and moist atmospheric conditions then prevailing afford conditions favourable for their re-establishment. Repotting is an important detail, much depending on when and how it is carried out. In a general collection of these Orchids, at no period of the year are all the plants ready for repotting at the same time, therefore no hard and fast rule can be laid down as to when this operation should be performed. Wherever it is possible, the best time is, undoubtedly, after that period of inactivity which usually follows flowering, when the plants show signs of again starting into growth and the roots become active. As regards the method of potting and kind of potting material to use, the compost best suited for these plants is one similar to that advised in these columns last month for Miltonias. It s essential that everything should be thoroughly clean, the pots well-drained to ensure a free passage for water, and over-potting rigorously avoided. No hard and fast rule can be laid down, but the more vigorous the plant and the larger the roots the rougher should be the compost and the larger the receptacle. For a month or two after repotting is a critical time for these plants, especially for those that have been much disturbed. A surface watering with a fine rose-can will often suffice for these, and the plants should be placed together and given the shadiest position. In the case of those shifted to larger pots without involving much disturbance of the ball, the plants will naturally need more moisture to benefit the lower and most active roots, and they should, with any specimens that have not been repotted, be allowed to occupy the lightest places in the house. The long spell of tropical weather during this summer made it impossible at all times to maintain a suitable temperature for cool-growing Orchids, no matter how one tried to temper the burning heat of the sun by shading, ventilating and damping. At Westonbirt, the thermometer in the cool houses has frequently registered 95 during the hottest hours of the day. From now onwards the nights will be cooler, though the days may be hot and bright, therefore with judicious damping and constant attention to ventilation—very important details to observe—a more equable temperature and favourable atmospheric condition may be maintained.

O. CITROSUM.—This beautiful Orchid is not at all difficult to cultivate,

and if given a light position in any house wherein plenty of fresh air is assured and where a cool intermediate temperature is maintained, the plants will grow and flower freely. As the plants grow best suspended from the roof-rafters they should be placed in pans or baskets, and for specimen plants the latter are preferable, being the lightest; over-large receptacles should always be avoided. It resents root disturbance, but when new rooting material is necessary, a compost rough and open in texture should be employed over ample drainage, and the materials pressed firmly about the roots. This Orchid requires plenty of moisture when growing freely, especially in the autumn when the bulbs are thickening.

O. GRANDE.—Plants of this species bloom about September, and as the flower spikes are produced when the pseudo-bulbs are partially developed, the supply of water at the roots should not be reduced till the latter are fully matured. Afterwards, while the plants are at rest, very little water will suffice to keep the pseudo-bulbs plump and foliage healthy.

SOPHRONITIS GRANDIFLORA.—Plants of this attractive Orchid which have been resting for some time will now be showing signs of renewed activity, and at this stage repotting may be done, but disturbance at the root should only take place when really necessary. Shallow pans are the best receptacles, and the usual Osmunda fibre and sphagnum compost forms the most suitable rooting medium; it is important to fix the plants firmly into the material. During the growing season the plants should not be allowed to remain dry for any length of time; the greater quantity of water at the roots should be supplied when the new growths and flower buds are in process of development.

SOBRALIAS.—The most suitable time at which to pot Sobralias is soon after the plants have ceased flowering. Root-bound plants should be given a shift into larger pots if specimens are required, and any that are considered too large may be divided. It is a difficult matter to separate the large fleshy roots without injuring them, and great care should be taken to preserve as many of these as possible. After shaking all loose material from the divided parts, cut off cleanly all broken roots just above where they are broken. Then put them in pots just large enough to accommodate them. Being terrestrial, the plants should be potted in the usual way, leaving the compost about an inch below the rim of the receptacle, and the crown of the plant on a level with the surface of the soil. Pots or teak-wood tubs should be used as receptacles, and these well provided with drainage to ensure a free passage for the abundant supply of water needed during the summer season. The plants should be potted firmly in a compost of good fibrous loam two parts, peat or A1 fibre two parts, and leaf-soil one part, with sufficient gritty material added to keep the mixture porous. The usual care should be exercised in watering newly potted

plants, especially those that have been divided. Undisturbed plants will need a liberal supply of water during the growing season, and an occasional dose of weak farmyard manure will benefit them. In the case of large specimen plants, some of the old growths that have flowered should be removed, severing them close to the roots, thus allowing the young growths that are forming additional room to develop, and at the same time admitting light and air to them. The leaves are subject to attacks of red spider and thrips, but if the syringe is used freely under and over the foliage on fine days little difficulty will be found in keeping these pests in check. Sobralias thrive best in a cool, intermediate temperature, with plenty of sunlight and fresh air at all times to enable the plants to form strong healthy reeds that will flower satisfactorily.

CŒLOGYNE CRISTATA.—Healthy established plants of this species and its varieties will require copious supplies of water at the roots until the pseudo-bulbs have completed their growths, and weak farmyard manure applied occasionally will prove beneficial. Plants newly potted this year need clear water only, and watering must not be overdone as the new material is very retentive of moisture, and too much water would sour the soil. The plants will be all the better if they are grown well up to the light, and with a free circulation of air about them, thus ensuring good, hard pseudo-bulbs.

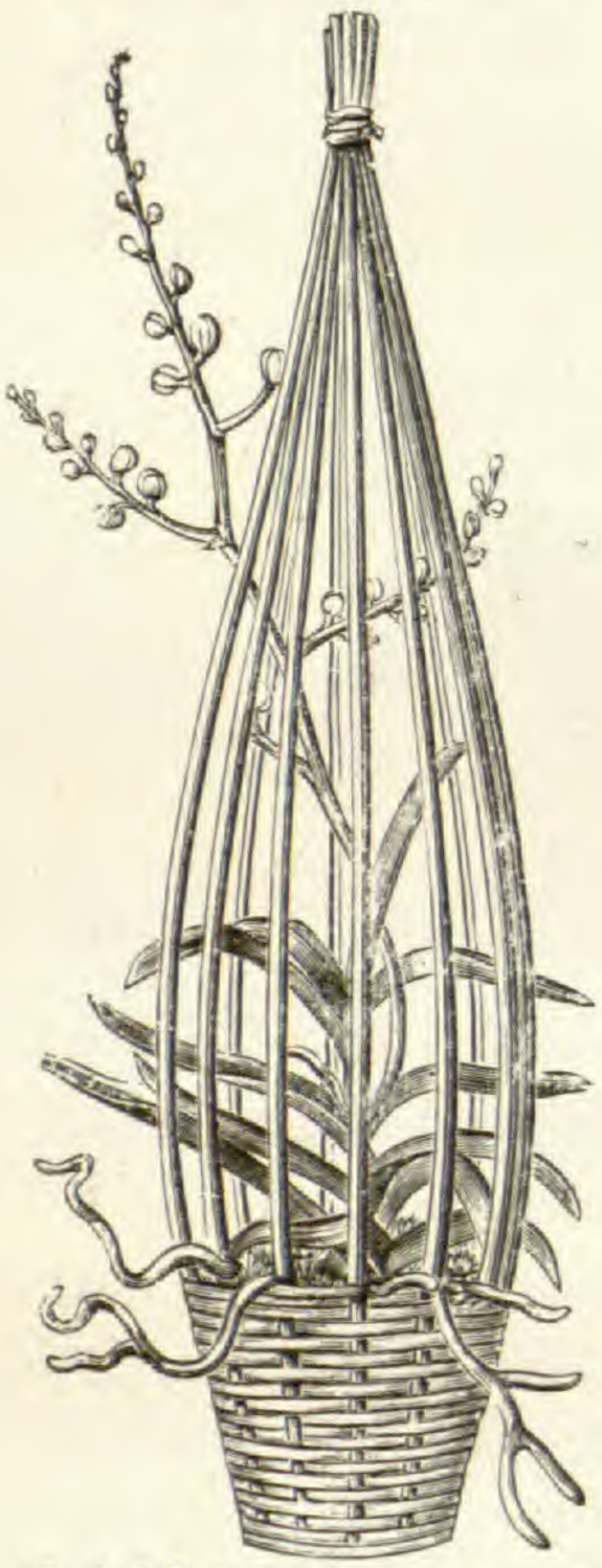
PLEIONES.—These will be finishing their season's growth, and as the leaves decay, scarcely any water will be needed at the roots, although the potting material should not be allowed to become dust dry, but kept just moist until the flowering season is past.

LYCASTES.—These should now be treated liberally, as the plants generally are forming their bulbs and rooting freely at the same time. Anguloas should be treated likewise, until such time as they show signs of losing their leaves, when the supply of water to them, and also to the deciduous section of Lycastes, should be gradually diminished. Others of the genus that retain their foliage should, after the growths are complete, be given less water, but they must not be allowed to remain dry at the roots for any length of time.

CALADENIA DOUTCHÆ.—This new species is described in the *Journal of Botany*, 1921, p. 175, by Mr. Oswald H. Sargent, who states :—" This closely resembles C. Roei, Benth., from which it is readily distinguished by its definitely caudate sepals and purple-veined labellum with extremely small and slender calli. I have named it in honour of Miss L. Doutch, from whom I received it in September, 1919. She was in charge of the State School at Datatine near Katanning, and the species was collected not far from the school."

THE HISTORY OF ORCHID BASKETS.

AN interesting note on the Orchid Basket is contributed to *The Garden*, July 23rd, 1921, by Mr. E. H. Jenkins, who states:—"As a Stanhopea was instrumental in bringing the basket cult into being, those who grow Orchids may like to know how it originated. Here is the story as related to me by Mr. John Mylam, nearly fifty years ago. Mylam at the time was Orchid grower to Messrs. Rollison's at Tooting. Formerly he was with Sigismund Rucker, a noted amateur cultivator at Wandsworth. It was while here that the accident which revealed the unusual habit occurred. The crock boy was carrying an armful of plants to the potting shed for overhauling, and, in endeavouring to open the door 'twixt potting shed and Orchid house, let fall some of the plants, one of them a Stanhopea. Mylam, hearing the crash, was on the spot instantly, and was not slow in venting his wrath on the unhappy culprit. This over, the gathering up of the fragments followed, when it was seen that in the case of the Stanhopea a raceme of flowers was coiled round the ball of the plant, unable to emerge from its pot prison. So great was Mylam's joy at the discovery that he at once forgave the boy for his seeming carelessness, for, as he remarked, 'I had learned a most valuable lesson, since the Stanhopeas had defied all attempts to flower them in the usual way.' The examination which followed, and which showed clearly the direction of the flower-spike from the bulb, left no doubt in Mylam's mind as to what was necessary to meet the case. In other words, it was the birthday of the Orchid basket, and now the grotesque flowers of the Stanhopeas appear in their natural way from the bases of the bulbs without let or hindrance. Mylam, at the time he gave me the information, had been at Rollison's ten or more years, and assessing the time at forty-six years, it would appear that it is approximating to sixty years since the accident which gave birth to the Orchid basket occurred."

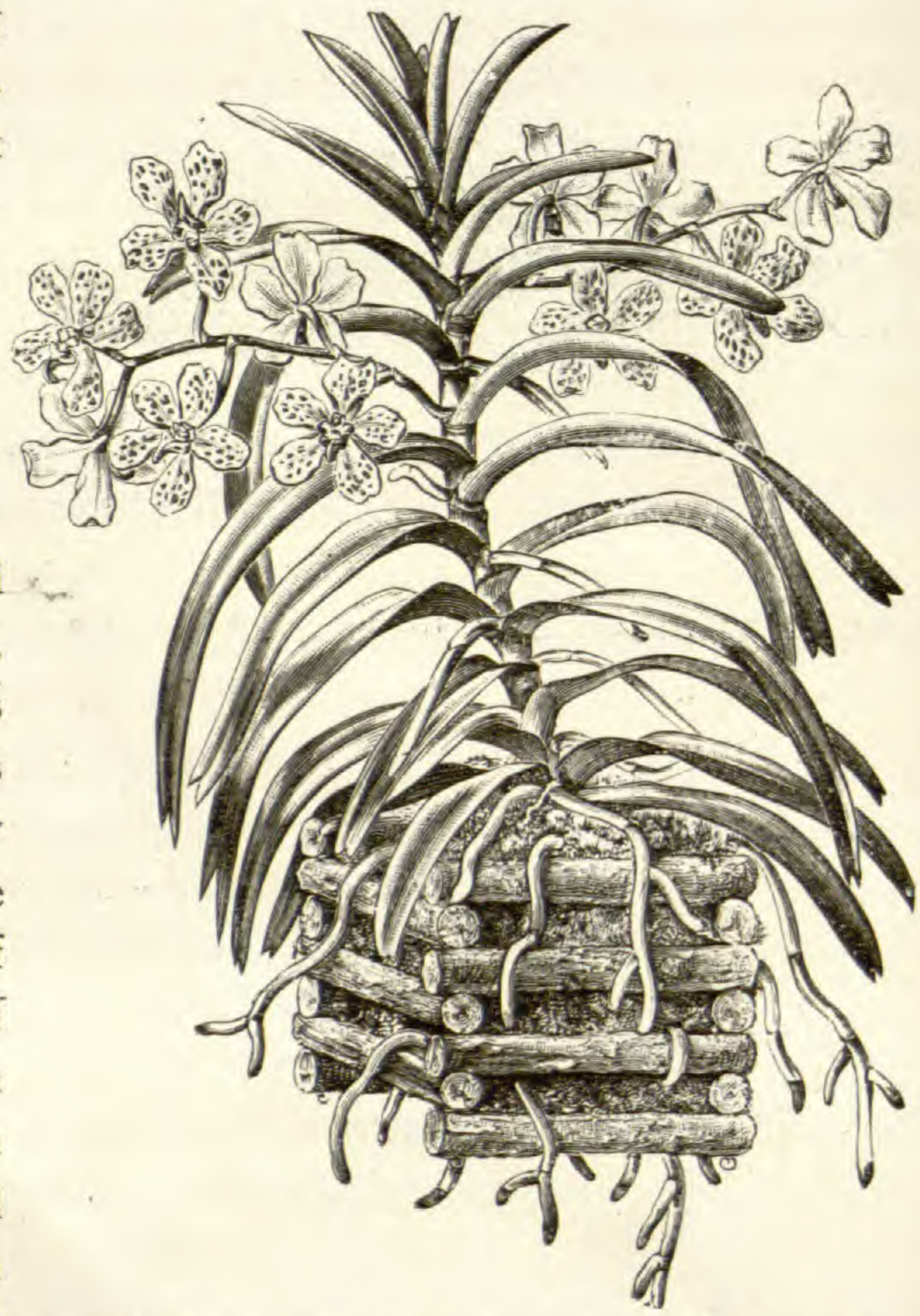


Orchid Basket used by Sir Joseph Banks in 1817. The plant is Sarcanthus paniculatus (Copied from the *Botanical Register.*)

The above story really relates to the first cultivation of a Stanhopea in a basket, and not to the birth of the Orchid basket, which dates back more than sixty years, in fact, over a century. Mr. Fairbairn, who followed Aërides odoratum in 1813, has stated:—"I put the plant when first received into a basket with old tan and moss, and hung it up in the pine house. where it was exposed to the summer sun and to the

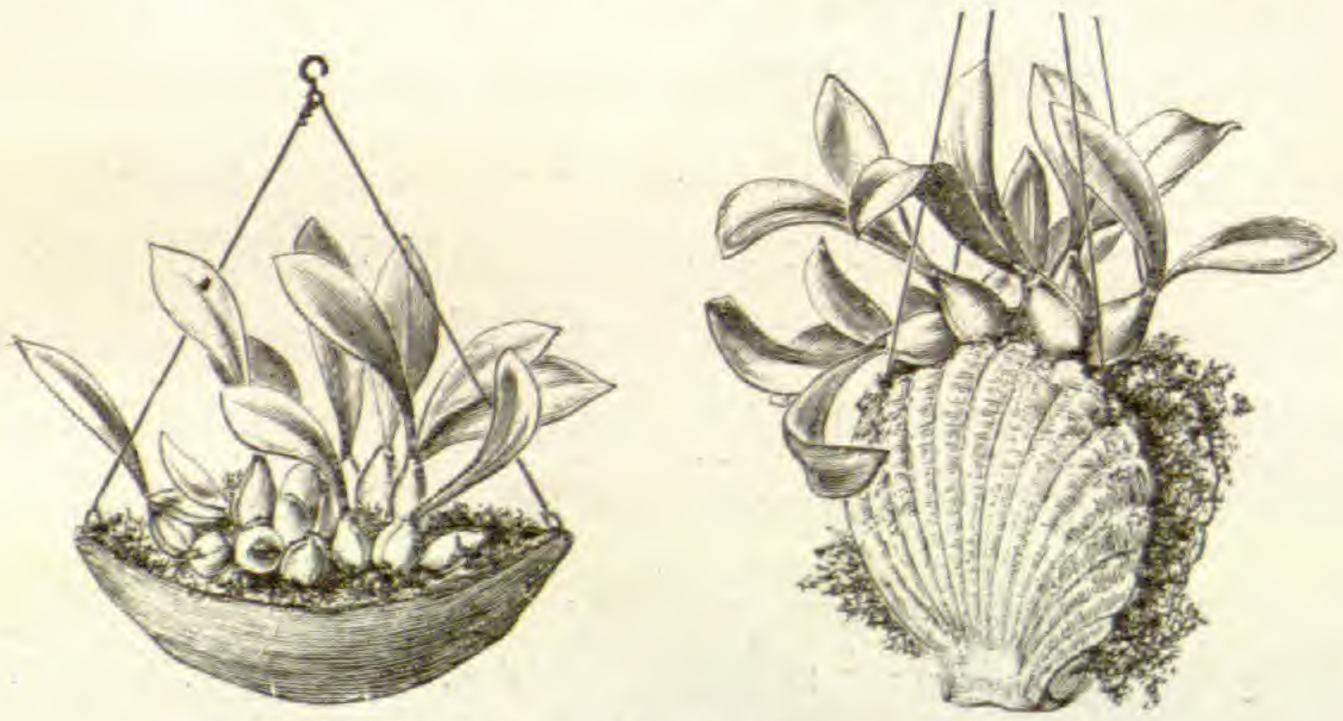
fire heat in winter. A tub of water was placed near it into which I could plunge the basket six or seven times a day, or as often as I passed it." (*Trans. Hort. Soc.* vii. p. 499).

About the same time Sir Joseph Banks devised one of the most successful methods of treating epiphytal plants then known. He placed the plants in light cylindrical wicker baskets or cages of suitable width, of which the frame work was of long slender twigs wattled together at the bottom, the upper portion being left open that the plant might extend its growth in any direction, and yet be kept steady in its station, the ends of the twigs having been tied together by the twine that suspended the whole from the woodwork of the house. A thin layer of vegetable mould was strewn on the floor of the basket on which the rootstock was placed, and then covered slightly over with a sufficiency of moss to shade it and preserve a due degree of moisture. Our illustration shows Sarcanthus paniculatus as cultivated by Sir Joseph Banks in 1817.



Vanda Roxburghii as cultivated by Mr. Sigismund Rucker in 1840. (Copied from Paxton's *Magazine of Botany*).

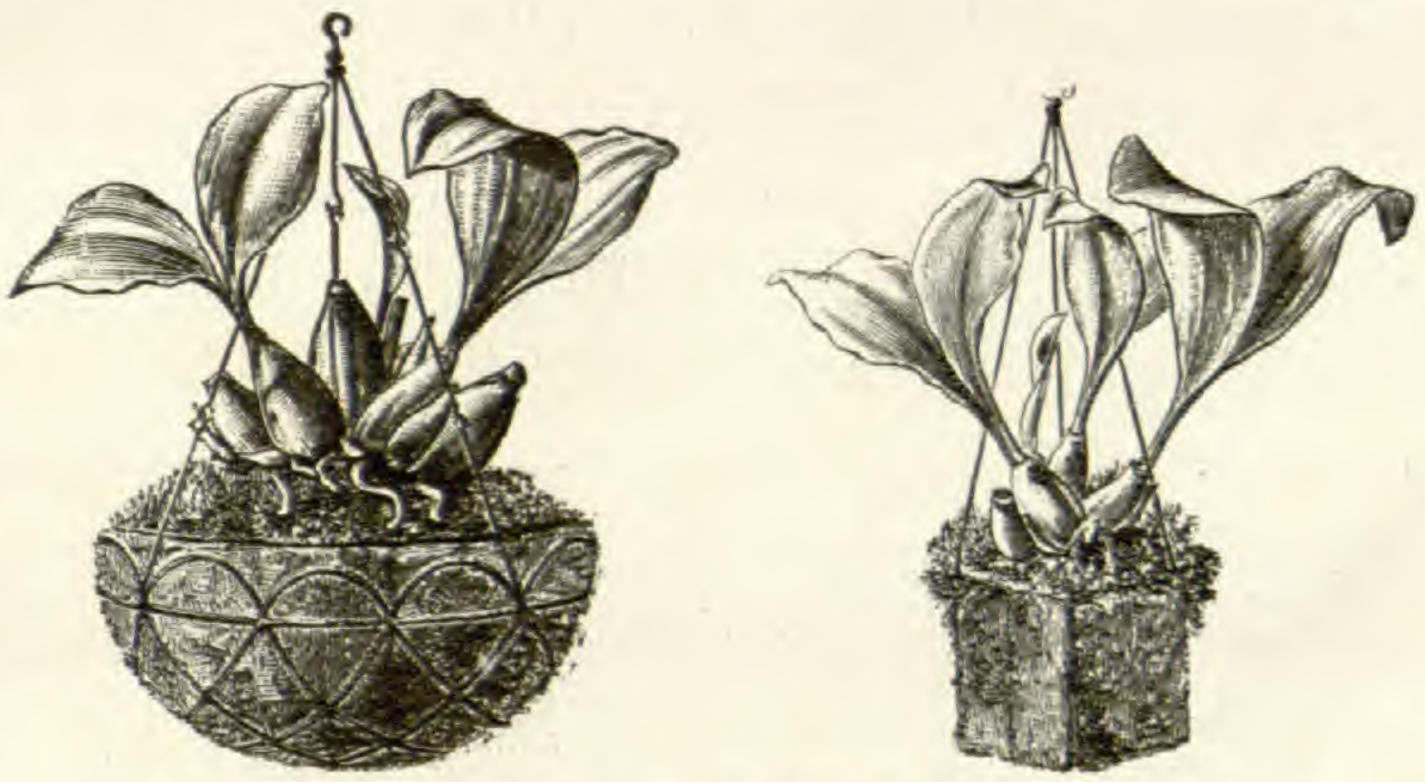
From the accompanying illustration of Vanda Roxburghii as cultivated by Mr. Sigismud Rucker in 1840, it will be seen that he was using baskets twenty years before the period specified by Mr. Jenkins. The illustration is copied from Paxton's *Magazine of Botany*, where it is stated that the plant can be cultivated in a rough wooden basket, or one formed of thin strips of pliable wood, with numerous openings at the sides and bottom. Moss, pieces of decayed wood, or any



Orchid Baskets used by Loddiges about 1840.

half-decomposed woody vegetable matter were recommended to be used as a compost.

Another record shows that Orchid baskets were used in 1845 by Mr. J. C. Lyons, whose name is preserved in Schomburgkia Lyonsii. His chief novelty was the use of slate baskets. He also used baskets made of slips of zinc, which he gave up because a large specimen Stanhopea grandiflora failed to send its roots through the moss that lined the basket. An examination showed that the roots had a burnt appearance wherever they had come into contact with the zinc. In his "Treatise on the Management of Orchidaceous Plants," published in 1845, J. C. Lyons states these plants were subsequently placed in oak baskets when the roots protruded considerably. The illustration which he included in his book shows that the baskets used by present-day growers are similar in shape and construction.



Orchid Baskets used by the Rev. John Clowes

Orchid Basket of slate used by Mr. J. C. Lyons.

Among the early-day collections that obtained celebrity was the one formed by the Rev. John Clowes at Broughton Hall, Manchester. Our illustrations show the types of baskets used by him. His name will be remembered by Anguloa Clowesii. In 1846 he presented his splendid collection to the Royal Botanic Garden, Kew. It is remarkable that it was the only bequest which the Orchid collection at Kew had received up to year 1896.

Lycaste Skinneri in Mrs. Wray's collection at Oakfield, Cheltenham in 1845. (Copied from Paxton's *Magazine of Botany*).

In 1845 J. C. Lyons recommended another "good mode," as he called it, of growing plants by making a frame of branches, in the same manner as the bottoms of the baskets are made, about two feet six inches long, and ten or twelve inches wide; rather a large basket, one would say to-day, but, however, this was to be filled with a selection of Orchids that flowered at the same time of the year, the tallest ones in the centre, when it would make a splendid ornament for the drawing-room or conservatory. Sometimes Lyons adopted smaller baskets fixed on the top of a strong support, which he said were peculiarly well adapted for showing off the pendulous racemes of splendid flowers, and also created a pleasing variety in the appearance of the house.

About 1860 Mr. Thomas Appleby, in his *Orchid Manual*, stated that a considerable number of epiphytal and a few terrestrial Orchids require to be grown in baskets, inasmuch as they have the peculiarity of sending their flower-stems almost perpendicularly downwards, showing evidently that they either grow on branches of trees or in crevices of rocks. Attentive growers long ago adopted baskets, or else placed the plants that had this peculiar habit in piled-up square pieces of peat, through which some of the flower-stems pushed and flowered well. Appleby once had a large plant of Stanhopea oculata so cultivated, and it carried no less than 17 flower-stems, with from six to seven large flowers on each.

Sixty years ago B. S. Williams regarded baskets as being more natural for the cultivation of true "air-plants," such as Vandas, Aërides, Saccolabiums, Phalænopsis, etc., for when so treated he believed they "send out roots much stronger into the air, and suck up the moisture, whereas if their roots are covered too much they are very apt to rot." Apparently teak wood was not then in use, for Williams gave the best kinds of wood as being Acacia, Apple, Pear, Plum, or Cork, if it can be obtained.

SHADING ORCHIDS.—The remarkable spell of hot weather experienced during the past summer reminds one of a method used by Messrs. Loddiges for shading Orchids during the summer of 1838. It consisted of twisting straw bands to as great a length as was required, but so lightly as to leave a quantity of loose straws hanging from them. These were then placed on the roof of the Orchideæ-house at about a distance of a foot from each other, and kept on at all times during the summer season, thus preventing the trouble of the putting on and taking off of canvas. They also so effectually shaded the house that it was never found necessary to open the ventilators in order to allow surplus heat to escape. On cold nights this straw material greatly assisted in keeping the house up to the desired temperature.

ROYAL HORTICULTURAL SOCIETY.

July 26th, 1921.

MEMBERS of the Committee present:—Sir Jeremiah Colman, Bart. (in the Chair), Sir Harry J. Veitch, Prince Tadashige Shimadzu, Messrs. Jas. O'Brien (hon. sec.), A. McBean, Pantia Ralli, C. H. Curtis, J. Wilson Potter, A. Dye, and Gurney Wilson.

AWARD OF MERIT.

LÆLIOCATTLEYA GENERAL MAUDE VAR. RUBENS (Lc. rubens × C. Hardyana), from H. T. Pitt, Esq., Stamford Hill.—One of the best of the hybrids belonging to the L. pumila section, in which the broad and flat petals of this species are carried through Lc. rubens (L. pumila × C. Hardyana) into the certificated hybrid. The large flower of rose-purple colour, with the extensive labellum more intense and tinged with crimson.

GROUPS.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. F. W. Thurgood), was awarded a Silver Flora Medal for an attractive exhibit in which were several fine examples of Cypripedium Triumphans, C. barbatum, C. glaucophyllum, and the new C. Vanguard (Rothschildianum × glaucophyllum). The scarce Angræcum Scottianum, good Miltonias, the pretty Cirrhopetalum umbellatum, Habenaria rhodocheila, some interesting Masdevallias and the rare Bulbophyllum macrobulbon were also noticed, while in the centre was Odontoglossum Paris, with a branched spike of white flowers, the segments blotched.

R. G. Thwaites, Esq., Streatham Hill (gr. Mr. F. Gover), staged Odontioda beechensis with red-coloured flowers, and two good plants of Miltonia vexillaria var. Queen Alexandra.

August 9th, 1921.

Members of the Committee present:—Sir Jeremiah Colman, Bart. (in the Chair), Prince Tadashige Shimadzu, Messrs. J. O'Brien (hon. sec.), F. J. Hanbury, A. Dye, W. H. White, C. H. Curtis, J. E. Shill, A. McBean, S. W. Flory, E. R. Ashton, Pantia Ralli, W. J. Kaye, J. T. Barker and Gurney Wilson.

FIRST-CLASS CERTIFICATE.

LÆLIOCATTLEYA GOLDEN GLOW (C. Venus × Lc. Sunrise), from Baron Bruno Schröder, Englefield Green, Surrey.—A very attractive hybrid carrying a spike of four medium-sized flowers of rich old gold colour, the labellum rosy damask, and the column creamy-white. The parentage comprises C. aurea, C. bicolor, C. Gaskelliana and L. flava.

AWARDS OF MERIT.

LÆLIOCATTLEYA VIVID (C. Rhoda × Lc. Thyone), from Messrs. Flory & Black.—An elegant result in which the single flower had yellow sepals and petals tinged with bronze, the broad labellum having a bright yellow throat and the expanded area crimson-red. Very promising.

CATTLEYA FALCO (Dupreana × Dowiana), from Messrs. J. & A. McBean.—This plant is a robust grower and yields a bold flower of thick texture and rich purple colour, the fully expanded and flatly formed labellum having the central area of dull orange.

GROUPS.

Messrs. Sander were awarded a Silver Banksian Medal for a fine exhibit of August-flowering plants, which included Cattleya Mariottiana, with a very pretty lip, C. Kienastiana Sanderæ, with white sepals and petals. C. Isis, C. Germania superba, and two excellent varieties of C. Hardyana, one richly coloured, the other with white sepals and petals. Other good Orchids included Cœlogyne Mooreana, Lc. Fulva, copper-yellow, Vanda Kimballiana, Cypripedium John Clark and C. callo-Rothschildianum.

Messrs. J. & A. McBean received a Silver Banksian Medal for a group of exceptionally well-grown plants. Among them were Cattleya Dowiana, C. Lady Veitch, a pure albino, C. Fabia, rich purple, C. Lord Rothschild, rose pink, and C. Abekeniæ, with cream coloured sepals and petals, the labellum golden with rose margin. The scarce Oncidium sphacelatum carried a many-flowered spike, and there were some excellent Odontoglossum hybrids.

His Grace the Duke of Marlborough, Blenheim Palace (gr. Mr. J. T. Barker), exhibited Brassocattleya Ida var. Sunset, with a spike of three large flowers of greenish-yellow tints, the pretty fringed labellum tinged with crimson-purple. Also Lc. Fazeana (C. Fabia × Lc. Schulzeana), with two large rich purple flowers, the orbicular and open labellum of more intense coloration.

Pantia Ralli, Esq., Ashtead Park, Surrey (gr. Mr. S. Farnes), exhibited Odontoglossum Aphrodite var. Mrs. T. Zarifi, with a spike of three large flowers of light-purple colour. Also O. Farnesii (Crawshayanum × Rolfeæ), with yellow sepals and petals, the broad white lip at the apex and purple at the base.

The Council of the Royal Horticultural Society has accepted from the Orchid Trade two Challenge Cups, which will be offered for Orchids at the forthnightly meeting on November 1st, 1921, at which a special display of Orchids has been arranged.

Any competitor who wins one of these Challenge Cups three times shall become the owner of it.

CERTIFICATED ORCHIDS.

OWING to the suspension of the *Orchid Review* for the first six months of the current year, the following Certificated Orchids are now published in order to make our records complete.

FIRST-CLASS CERTIFICATES.

ODONTIODA CARDINALIS (Oda. Schröderiana × Odm. eximium), from Messrs. Charlesworth & Co. November 2nd, 1920. One of the finest Odontiodas yet produced, both in colour and shape. Flowers about four inches across. Sepals and petals scarlet-crimson, tips and margins white, tinged with lilac. The handsome lip blotched with chestnut-red.

ODONTOGLOSSUM ST. GEORGE, Ralli's variety (eximium × Alexandrina), from Pantia Ralli, Esq. November 16th, 1920. A fine flower of perfect shape, white heavily blotched with deep purple.

ODONTIODA JUPITER, Pitt's variety (Oda. Coronation × Odm. eximillus), from H. T. Pitt, Esq. November 30th, 1920. A charming flower of model shape, and bright ruby-red colour, the segments having a white margin.

CYPRIPEDIUM FOREST KING (Desdemona × Beekmannii), from H. T. Pitt, Esq. November 30th, 1920. A vigorous plant carrying a large flower, the white dorsal sepal green at the base and with lines of purple spotting.

CYPRIPEDIUM MEMORIA F. M. OGILVIE, Chardwar variety (Curtmanni × Pyramus), from Messrs. Armstrong & Brown. November 30th, 1920. One of the best of its section. The dorsal sepal wider than its length, white, with the middle mauve-purple. Petals and lip yellowish.

LÆLIOCATTLEYA SCHRÖDERÆ GLORIOSA (C. Maggie Raphael alba × Lc. Bella alba), from Baron Bruno Schröder. December 14th, 1920. A pure-white flower of perfect formation, the lip, however, of rich purple, with a few thin yellow lines on the white base.

LÆLIOCATTLEYA SCHRÖDERÆ VAR. CONQUEROR, from Baron Schröder. January 11th, 1921. Flowers seven and a half inches across, petals pure white, lip purplish crimson.

ODONTIODA HYPATIA, McBean's variety (Odm. ardentissimum × Oda. Diana), from Messrs. McBean. January 11th, 1921. A remarkable hybrid in which the large segments are claret-red with blush-white margin. Lip with yellow crest and with dark blotch on the medium area.

SOPHROLÆLIOCATTLEYA JOSEPH CHARLESWORTH (Lc. Eurydice × Scl. Marathon), from Messrs. Charlesworth & Co. January 25th, 1921. One of the largest and most brilliantly coloured of the Sophronitis hybrids. In colour reddish-rose with a golden sheen.

SOPHROLÆLIOCATTLEYA FALCON (S. grandiflora × Lc. Aureole), from Lt.-Col. Sir George Holford, K.C.V.O. February 8th, 1921. A beautiful hybrid having scarlet-red flowers, the lip ruby-red with a light orange base.

CYMBIDIUM DRAGON FLY, from Lt.-Col. Sir George Holford, K.C.V.O. February 8th, 1921. Of unrecorded parentage. Flowers pearly-white, the lip having claret lines on the side lobes and heavy claret-purple markings on the front. Probably a hybrid of C. Parishii.

CYMBIDIUM LANDRAIL (Dryad × Lowianum), from Lt.-Col. Sir George Holford, K.C.V.O. February 22nd, 1921. The spike bore ten large pure-white flowers, which have a pretty reddish-maroon band on the median lobe of the lip.

DENDROBIUM MODEL, The Dell Variety (Cybele × nobile), from Baron Bruno Schröder. February 22nd, 1921. A splendid hybrid having very broad sepals and petals, which are white at the base and bright mauve at the apex. The broad labellum with a deep maroon disc.

ODONTOGLOSSUM CRISPUM VAR. F. FELTON, from Messrs. J. & A. McBean. March 8th, 1921. An immense flower, white, slightly flushed with lilac, and with an occasional purple spot.

BRASSOCATTLEYA SPECIOSA VAR. LADY COLMAN, from Sir Jeremiah Colman, Bart. March 22nd, 1921. A large flower of perfect shape, white, with pearly-pink tinge, the labellum with a chrome yellow disc.

ODONTOGLOSSUM BRITANNIA (Solon × The Czar), from Messrs. Charlesworth & Co. March 22nd, 1921. Segments very broad, and almost covered with claret-red blotches, the margin minutely fringed.

LÆLIOCATTLEYA ORANGE BLOSSOM (Lc. Elinor × Lc. Trimyra), from Lt.-Col. Sir George Holford, K.C.V.O. April 5th, 1921. An elegant flower of rich chrome yellow colour and having an orange tinge.

ODONTONIA W. R. FASEY (Miltonia Venus × Odm. Louise), from W. R. Fasey, Esq. April 5th, 1921. An uncommon but very pretty result. The inner parts of the segments white, with dark claret spotting, the outer portions rosy-lilac, and similarly spotted.

ODONTOGLOSSUM DIAMOND VAR. PERFECTION (King Arthur × eximium), from Messrs. A. & J. McBean. April 5th, 1921. A large flower of fine shape. Segments claret-red with a white margin.

MILTONIA VENUS VAR. FASCINATOR, from H. T. Pitt, Esq. April 26th, 1921. A very pretty result, in which the large flowers are rose-pink, with a ruby-red blotch at the base of the lip, as well as radiating lines.

ODONTOGLOSSUM ROSINA VAR. INVINCIBLE (eximium × Lady Pirrie), from Messrs. J. & A. McBean. April 26th, 1921. A large flower of purplish claret colour, with narrow white margin to the segments.

ODONTIODA JOICEYI SPLENDENS (Odm. promerens × Oda. Coronation), from Messrs. J. & A. McBean. May 10th, 1921. A noble flower in which the large segments are heavily blotched with claret-red on the inner parts, the outer parts rosy-lilac. The lip blush-white and with ruby spots.

THE ORCHID REVIEW.

VOL. XXIX.] OCTOBER, 1921. [No. 340.

NOTES.

MASDEVALLIA SIMULA.—When this miniature species was brought to the notice of amateurs it was said that if they would like to admire its charms they would have to arm themselves with very powerful eye-glasses, the flower just equalling in size a poorly-fed fly of our windows. But even to-day it will well repay being examined through a magnifying glass, for it is quite a little wonder as regards its coloration. The flower has a purplish upper sepal, and this, in the original description, is said to have "many pellucid honey-coloured bars!" What an attraction for the poorly-fed fly!

PHAIUS BLUMEI.—Regarding the Bernaysii variety of this species, mentioned on p. 81, Mr. Bernays has stated (*Gard. Chron.*, 1873, p. 1244): "I found the plant on Stradbroke Island, among thousands of its congener, Phaius grandifolius, from which, when not in flower, it is with difficulty distinguished. These plants occupied many acres of swampy land, and being in full bloom were inexpressibly beautiful. The effect was heightened by the margin of the swamps being lined with the beautiful fern, Todea superba, breast-high; and in places this was so densely interlaced with the delicate climbing fern, Lygopodium microphyllum, that we had to cut our way through."

EPIPACTIS MUELLERI.—Under this name Col. M. J. Godfery, F.L.S., describes in the *Journal of Botany*, April, 1921, a new European Epipactis. He states: "The only doubt in my mind is, not whether E. Muelleri is a distinct species, but whether it does not constitute a separate genus. It must be admitted that differences in the structure and co-ordination of the reproductive organs furnish generic rather than specific characters. But it is manifestly undesirable to create a new genus except on quite unassailable grounds, and the whole facies of the plant is so exactly that of an Epipactis that it seems preferable to widen our conception of that genus, rather than to found a questionable genus on a single type."

LÆLIOCATTLEYA KADINA.—This new hybrid is a large edition of Lælia Dayana, with a very fine and intense purple lip, the throat buff or brownish yellow. Instead of the side lobes standing in a ridge above the column, they are rolled over it, as seen in many forms of Lc. elegans. The parentage is C. labiata × Lc. Novelty, the latter being L. Dayana × Lc. elegans. I have called it Kadina after one of our towns in the North, and which is an aboriginal name.—E. BAXTER COX, Adelaide, South Australia.

GRAMMATOPHYLLUM SPECIOSUM.—When the Kew specimen of this giant Orchid flowered in 1907 three racemes developed. The tallest attained nearly 11 feet in height and carried 82 expanded flowers and 40 unopened buds in various stages of development, the other two racemes being slightly smaller. The Kew plant, presented by Messrs. Sanders in May, 1893, was one of the largest that could be found in the neighbourhood of Penang. It was originally intended for the Chicago Exposition.

ORCHIS MACULATA ALBA.—In the July issue is a note from Mr. E. Cooper on Orchis maculata alba, which he found growing in the vicinity of Salisbury, and there appears to be some doubt as to the albino variety being fertilised by bees to the same extent as the coloured form. In my mind there is no doubt, for I found colonies of both forms on Salisbury Plain while soldiering there during the war; and very fine they were, the albinos being as plentiful as the coloured ones. I saw them in flower, and again later on in the season when there were as many seed-pods on the whites as the others. If the bees only visit the coloured flowers, then some other agent makes up for their slackness; but what it is I cannot say, for I had not the time to study them as I should have liked.—A. CONINGSBY, Southgate.

CATTLEYA IRIS and C. VENUS.—When the hybrid between C. bicolor and C. aurea first made its appearance, just twenty years ago, it was at once apparent that something very much out of the usual run of hybrids had been obtained, for it possessed thick texture in a marked degree, and the beautiful coloration left little to be desired. Meritorious as the flower certainly then was, a further crossing with C. aurea proved that the size could be increased, and in just a few instances made equal with that of C. aurea. This sccondary cross was first seen in flower in the autumn of 1908, and recorded as Cattleya Venus (aurea × Iris). One of the finest varieties yet seen is that known as The Knowle variety, to which a First-class Certificate was awarded by the Manchester Orchid Society. The plant is now in the collection of Dr. Fred. Bedford, Fulford, York, and has been seen in perfection during the current autumn.

PTEROSTYLIS AUSTRALIS.

By W. H. St. Quintin.

THE genus Pterostylis is peculiar to the Australasian region, nine species being confined to New Zealand, 28 to Australia—two are common to both, and only one species is found outside these countries, in New

Pterostylis australis (showing different positions of the lip).

Caledonia. I am indebted to Mr. R. F. Burton for examples of two species, P. australis, of which I send a photograph, and P. trullifolia, a much smaller plant, but like the rest of the genus, equipped with the wonderful contrivance for ensuring the fertilisation of its flowers. I cannot do better than quote from Mr. T. F. Cheeseman's "Manual of the New Zealand Flora," which gives a very clear description of the process. "The mode of

fertilisation is most curious, and is well worth an attentive study. The upper sepal and the petals connive and form a hood, at the back of which the column is situated. The irritable lip hangs out of the entrance to the flower, and forms a convenient landing place for insects. When touched by an insect it springs up, carrying the insect with it, and imprisoning it within the flower. The insect can only escape by crawling up the column and passing between the two membraneous projecting wings, emerging directly in front of the anther. In doing this, it is first smeared with viscid matter from the projecting rostellum, and then drags away the pollinia, which can hardly fail to adhere to its sticky body. When visiting another flower, it must pass over the stigma before escaping, and it is almost certain to leave some of the pollinia on its viscid surface."

Two of my plants flowered early in April last, and I attempted to reproduce the performance, described by Mr. Cheeseman, with a living insect. I thought that I might introduce some bee, or fly, into the flower, *nolens volens*, and at least might have the satisfaction of seeing it emerge carrying the pollinia. Unfortunately, the weather, while the flowers were fresh, was very cold, and none of the small wild bees, such as Andrena, which I thought would be suitable, could be found, while the hive bee proved too bulky. Various blue bottles and other flies that I pushed into the flower showed that they had not the muscular power to force their way up in front of the anther, indeed, they seemed to find the hood a comfortable retreat, and I had to release them.

The flowering season of P. australis is given as November to January (Flora of New Zealand). With me it has accommodated itself to the change of hemisphere, and flowers in March to April. On the contrary, P. trullifolia keeps to its proper season, and is in bloom soon after Christmas. Mr. Burton tells me that it is the same with him, though both sets of plants were sent over about the same time, and have been grown under very similar conditions. The flower of P. trullifolia is, though very much smaller than that of P. australis, very similar, except that the free lobes of the labellum point forwards, instead of backwards, as in the larger species.

Before taking the photograph, I touched the sensitive basal appendage of the lip of the left-hand plant causing the lip to fly back. The plant on the right-hand side was not disturbed, and shows the lip in position, and the "trap" ready for the insect visitor. I may add that on a cold day, as might be expected, the labellum seemed much less sensitive, and finally lost its power of movement as the flower faded.

CŒLOGYNE LAMELLATA.—This species, a native of New Hebrides, has greenish-white flowers, the lip bearing numerous rows of corrugated keels.

POLLINATION OF ORCHID FLOWERS.

FOR many years past there has been a great desire to produce hybrids, and, as is well known, the method consists of removing the pollen from one flower and transferring it to another. This is called cross-pollination. It is also used in cases where a typical form of any species is required to be increased by being raised from seed, for it is a comparatively easy matter to obtain the necessary pollen from another plant. Some very fine forms of Odontoglossum crispum have of late years been raised by crossing selected varieties. In fact, the results have been so good that it is very doubtful if anyone would again go to the trouble of importing these plants from South America. Cattleya aurea has also been raised in England, and under cleaner conditions than perhaps exist in its native country.

But when a new and fine variety, say an albino, is required to be increased by seed raising, it is very rarely possible to procure pollen from a similar and unrelated plant, consequently the flower must be pollinated with its own pollen. In other words, self-pollination is brought about. In the case of a plant, such as a Dendrobium, having several flowers, there are better chances of success, but when only a single flower is available then there is no other means of attempting fertilisation than by pollinating the individual flower with its own pollen. While cross-pollination nearly always results in effectual fertilisation, self-pollination by no means brings about such successful results; in the best cases rarely is more than a small quantity of seed produced. The capsule may appear to be full, but an examination under a powerful lense will frequently prove that much of the enclosed material is valueless, the few perfect seeds being lost unless treated with considerable care. The late Mr. Charlesworth found this to be the case, and devised special means for sowing the contents of capsules that resulted from self-pollinated flowers and obscure crosses.

Concerning this subject, Dr. A. F. G. Kerr made some notes in Northern Siam on Orchids growing naturally, and on specimens removed from the neighbouring jungles to his garden for convenience of observation. The results are published by the Royal Dublin Society (*Proc. vol. XII., N.S., No.* 5). One of the plants experimented upon was Dendrobium pulchellum, Roxb., known in gardens as D. Dalhousieanum. It was found that when a flower of this species had its pollinia removed, and placed on its own stigma by artificial means, the flower soon withered away, but when the pollinia were placed on the stigma of the flower of another plant, that flower formed a capsule. Thus, if self-pollination could take place by natural means, it would probably be of no benefit to the flower. Seven flowers were artificially pollinated; of these six were pollinated with their own pollen, and all withered without showing any swelling of the ovary;

the seventh was pollinated with pollen from the flower of another plant, and formed a good capsule. Dr. Kerr remarks that he did not experiment on a sufficient number of flowers to enable him to say definitely that a self-pollinated flower would never produce a capsule; but from the experiments, and from the mechanism of the flower, he concluded that a capsule is never naturally produced by self-pollination in this species. Eleven flowers of Dendrobium capillipes were pollinated with the pollen from other flowers on the same raceme, but none of them produced capsules. Twenty-six flowers of D. aggregatum were self-pollinated without a single success, but two that were cross-pollinated both yielded capsules of seed. In all, sixteen species of Dendrobium were experimented upon, the total number of flowers being 112. No less than 100 were self-pollinated, but only eight yielded capsules. Of the twelve that were cross-pollinated, every one was a success.

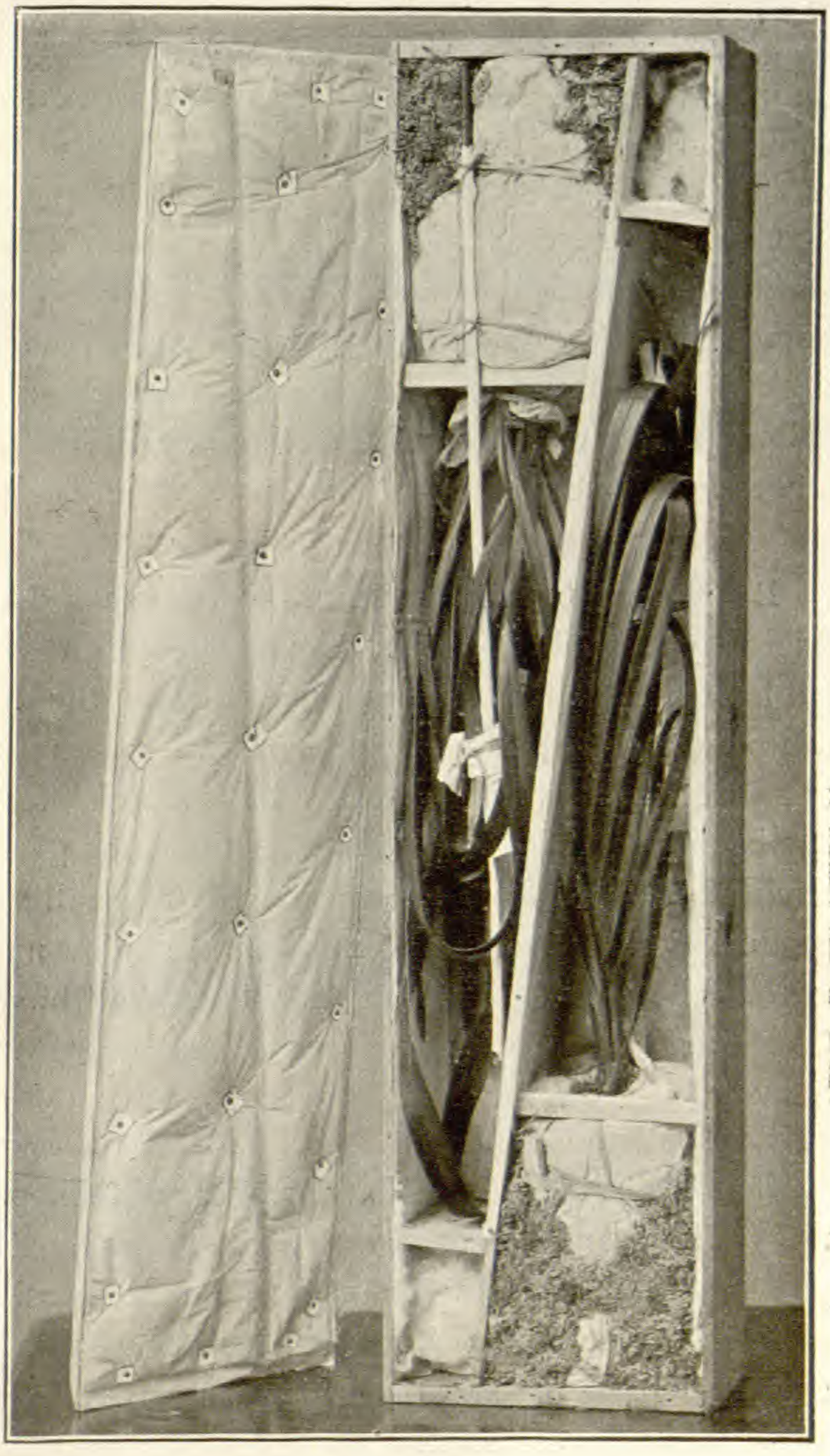
We may here allude to some interesting information given by Mr. Richard Pfau, of San José de Costa Rica (*Orc. Rev. II.*, *p.* 295). Writing of the Fertilisation of Orchids in the Tropics, he says that Epidendrum Pseudepidendrum, an extremely rare plant, grows at Bugaba, in Chiriqui, occupying an area of less than two miles diameter, and there it fruits regularly. Once he found a single and unique specimen of it at Potrerillos, some fifteen miles from Bugaba, whose big dimensions and freedom of flowering showed that the climate of Potrerillos was even more congenial to it than that of Bugaba; but the numerous flowers of that specimen never became fertilised, although the locality was full of native bees. And so it was with the rare Odontoglossum Krameri, which grows in a very restricted locality in Chiriqui, and again one hundred and fifty miles off in Costa Rica. The two or three unique and isolated specimens found of it far off from their natural spots were always sterile. Such was also the case with Odontoglossum chiriquense, of which he discovered the first and quite isolated specimen ten miles away from its very restricted natural habitat.

Mr. Pfau suggests that most Orchids seem to each have their own fertilising insect, which must in most cases be of a very restricted local occurrence, and without which the respective Orchid, even under quite identical climatic conditions, may thrive and flower individually, but without propagating itself by means of seed.

Now from the combined results of Dr. Kerr's and Mr. Pfau's observations we learn that seed-pods are but rarely produced when the flowers are self-pollinated. The former proved this by direct experiment, while the latter has shown that isolated plants remain unfruitful, not because, as he says, the bees usually associated with the Orchids are absent, but in reality because there is no other pollen available but their own.

EXPORTING ORCHIDS TO JAPAN.

THE interesting article by Mr. J. M. Black on the treatment of exported established Orchids (p. 41) has drawn attention to a subject that is well worthy of the careful consideration of the trade growers who despatch the plants as well as the purchasers who receive them. Doubtless more than one likely customer has refrained from purchasing plants from a distance on account of the damage that might result from unskilled packing, or the subsequent treatment. No such fear need be entertained in the future, for recent results prove that Orchids can be packed to travel almost any distance, and during a considerable period, in fact, they travel far better than the great majority of plants.



CYMBIDIUMS EXPORTED FROM ENGLAND TO JAPAN.

A few years ago Messrs. J. & A. McBean received an order to despatch various choice Cymbidium hybrids to Baron Ryokichi Kawada, of. Tokyo, Japan. Three boxes, each containing two plants, were sent by parcel post. The Baron was so pleased with the Orchids when they arrived that he had one of the boxes photographed, so that the method of packing and the splendid condition of the plants could be made known. Our illustration shows that the box was lined with cotton wool, and the surface papered, in

order to protect the plants from cold, for, it should be stated, they travelled via Siberia during the early part of the year. At each end of the box an aperture was made for providing ventilation, this being covered by wire gauze, and the chamber filled with cotton wool in order to moderate any sudden inflow of cold air. It will be observed that the foliage was entirely free of any packing, and on arrival was found to be perfect, not a leaf had changed its colour. The pots were securely fastened, and the ball of compost in no way disturbed, hence all the roots remained unbroken, and in a living state.

GOMESA SCANDENS.—The specific name of this plant is given in allusion to the elongated stem and climbing habit. The pseudobulbs are distant from each other from two to four inches, the intervening portion being clothed with imbricating lanceolate dictichous bracts. The leaves are oblong, from two to four inches long, and the racemes arching, about six inches long, and carrying numerous light green flowers.

BULBOPHYLLUM VIRESCENS.—This remarkable Javan species was originally described about twenty-one years ago, and first came under public notice when flowered by the late Sir Fredk. Wigan, Bart., who exhibited it at the Royal Horticultural Society, July, 1906, when a First-class Certificate was awarded, a high honour for a Bulbophyllum. Little has been heard of it since then, but the same plant, or a propagated portion, having benefited from the warm and unusually sunny summer, has again produced a fine umbel of six flowers, a similar number to the spike produced at the time of being certificated. This plant has been cultivated by Messrs. Charlesworth & Co., and was exhibited by them at the Royal Horticultural Society on September 6th.

BOLLEA LALINDEI.—The discovery of this species is due to Mr. Lalinde, the Orchidophilist architect of Medellin in New Granada, who for so many years assisted the New Granadan travellers and Orchid destroyers without being the least acknowledged in Europe. Finally, the gentleman appears to have settled his mind by sending himself living Orchids to Europe, and he began to do so assisted by his young Belgian friend, M. Patin. Thus wrote Reichenbach in the *Gardeners' Chronicle* of 1874. The flowers were described as beautiful bright violet, the tip of the upper sepal green, and the inferior halves of the lateral ones brownish purple, the lip deep orange, and the column deep purplish. B. Patini, described at the same time, and from the same source, is evidently a variety of it. What an attraction a well-flowered plant would be to-day, for but few amateurs have seen it, and still fewer have grown it.

SEED DISPERSAL IN RELATION TO COLONY FORMATION IN GOODYERA PUBESCENS.

By Oakes Ames, F.L.S., Director of the Botanic Garden of Harvard University.

THE reference on page 40 of the current volume of the *Orchid Review* to the dispersal of Orchid seeds may well be amplified by observations I have made in connection with mycorrhiza of New England species.

In efforts to ascertain the earliest stage of development, under natural conditions, at which the mycorrhizal fungus penetrates the embryo of our native Orchids, studies were undertaken of several species that seemed likely to furnish material in abundance. *Goodyera pubescens* R. Br. was finally selected for intensive observation through a period of twelve months.

Goodyera pubescens in its native haunts forms attractive colonies in which the dark green leaves with whitish veins often make mats over areas several square metres in extent on the woodland floor. The racemes of white globular flowers are produced in late July and early August. The capsules dehisce and shed their seed before the winter months come on.

The colonies or patches of this species are usually widely scattered. If single plants occur they are rare. As the creeping rhizomes would soon create open spaces in a colony and would gradually give rise to an ever-widening circle as the plants crept toward the periphery of the inhabited area, my interest in the life history of the species was awakened, and an attempt to explain the cause, persistence and characteristics of the colonies was instituted. That the formation of the colonies is in part due to seed dispersal my observations soon proved.

I discovered that the colonies are constantly replenished by seedlings, and that with rare exceptions only those seeds are likely to experience conditions favourable to germination that fall on the humus among mature plants; in other words, that find lodgment within the confines of a colony. This is to be explained on the assumption that seeds which drift away on the wind and fall where the ground is sterile, as to the necessary mycorrhizal fungus, fail to germinate unless they have been infected before dissemination. The seeds that drop within the colonies soon nestle close to the rhizomes of mature plants, where they may, at the proper time, presumably in June or July of the year following dissemination, enter into partnership with a fungus which is present and supposedly necessary to stimulate germination. Careful observations revealed young plants in different stages of development within the colonies, close to mature plants, the smallest ones being without leaves, of a whitish colour, and apparently devoid of chlorophyll. At first glance the more advanced seedlings might readily be mistaken for new growths from established rhizomes. The next

step in this study was to ascertain where and when the seeds germinate that give rise to these seedlings.

My initial observations of *Goodyera pubescens* for this purpose were made in the autumn, at a time when the seeds of the previous year would have already germinated. To make sure of a crop of seedlings for investigations through the seasons, I sowed an abundance of seed in thrifty colonies which were close to my laboratory and always easy to locate and visit. Unfortunately these colonies were in a woodland where lumbering operations began in the winter time. Although I could detect my seeds and study them, and although they were plump and apparently in good condition until early spring, none of them showed signs of germination. In fact, the colonies themselves plainly indicated the injurious results of changed conditions brought about by the thinning of the surrounding trees. In early August, however, in other colonies, I was able to find hundreds of seedlings (protocorms), with the testa still persisting. These were like the usual Orchid protocorm, and for all the world similar to microscopical carrots in shape, although pure white in colour, the smallest ones hardly a millimetre long. With few exceptions these tiny things were tangled up in the root-hairs or were close up to the rhizomes of mature plants, attached by means of their own long cobwebby hairs. A few were found on the humus that usually clings to the rhizomes at the base of the rosettes of leaves. Sometimes as many as a dozen of these protocorms would be discovered in close contact, resembling egg clusters of some insect. As I had already noticed tufts of young plants, their rhizomes intertwined, I knew that these little protocorms would develop, no matter how crowded, without interfering with one another, probably quite happy in close association, because the nature of the species is strictly a gregarious one.

The colony-forming habit of *Goodyera pubescens*, then, finds an explanation in limited seed dispersal, and we may postulate safely, I think, that the age of a colony is not to be estimated at the age of its oldest components. A long-established colony may simply be an aggregation of comparatively young plants, and its capacity to attain great age a direct result of those conditions that are associated with mycorrhizal phenomena.

Microscopical examination of the tiniest protocorms revealed mycorrhizal infection. In embryos still partly enclosed by the testa of the seed the fungus extended nearly the whole length, but as growth progresses the upper half becomes translucent, free from hyphæ, the cells containing starch-like granules that turn brownish when treated with iodine.* Through the long cobwebby hairs that arise singly or in tufts, far apart on the

* For shape of protocorm and distribution of the fungal hyphæ at this stage of development, Bernard's figure of Phalænopsis may be taken as a guide.—Ann. des Sc. nat. ser. 9, 9 (1909) t. III., fig. 5.

surface of the protocorm, the fungal hyphæ could be clearly seen in their course from the interior of the protocorm to the humus from which, presumably, they help to bring in substances that the Orchid utilizes, and in exchange for which they may be supplied with something more than an abiding place. These hairs are round at the end and the hyphæ penetrate the tips. It is worth while to note in this connection that the body of the protocorm may, as it were, be suspended by these hairs and consequently free from direct contact with the substratum.

The growth of the protocorms is slow, and a wide range of variation is noticeable in the rate at which different seedlings develop. As cold weather approaches it is possible to find many protocorms that have failed to produce a leaf. Then there is a dormant period, and the protocorms are found in the spring in the same condition in which they entered on their winter rest.

Although in the course of my studies I have examined, literally, thousands of protocorms of *Goodyera pubescens*—a statement that may well call forth severe criticism from those who are laudably striving to protect our native Orchids from extermination by ruthless hands—I have failed to find one that was not thoroughly infected by a mycorrhizal fungus. So it would seem that in nature Orchids depend for successful development on an intrusive fungus, and that in some cases, at least, the characteristics of growth, colony formation for example, are due to some kind of symbiotic relationship. Furthermore, it may be assumed that the necessity for the overwhelming abundance of seeds produced by a single capsule finds an explanation in the fact that the mortality among the seeds that fail to reach a nidus of mycorrhizal fungi is enormous. On what other assumption, indeed, are we to explain the production of 1,756,444 seeds by a single capsule of a Maxillaria, or the exceeding rarity of many Orchid species in their native lands.

Orchis maculata.—*The Journal of Botany*, May, 1921, contains an interesting article by Rev. T. Stephenson, D.D., and Mr. T. A. Stephenson, M.Sc. on "The Forms of Orchis maculata." The authors first describe the chief British types of the Spotted Orchis, and then discuss the nomenclature, especially in regard to the continental forms. The main British types are referred to provisionally as O. Fuchsii (including the race O. O'Kellyi) and O. ericetorum. Both these forms are regarded as quite distinct and deserving of specific rank. An accompanying plate depicts six lip types of the endless varieties of Orchis ericetorum, and nineteen side views of flowers of Marsh and Spotted Orchids, in which a fairly even gradation can be noticed from the stoutest forms of incarnata and purpurella, then prætermissa and latifolia, to the slender forms of maculata.

ORCHIDS AT SHREWSBURY SHOW.

AUGUST 17TH AND 18TH.

ORCHIDS are not the pronounced feature at Shrewsbury as they are at the London flower shows. There are no classes specially devoted to them, but their value in the groups and bouquets was evidently realised and taken full advantage of.

In Class II., miscellaneous and fine foliage plants arranged for effect, the First Prize was awarded to Messrs. J. Cypher & Sons, who included some fine Cattleyas and Læliocattleyas, Cypripedium hybrids, such as Maudiæ and Rossettii, Odontoglossum hastilabium, Lycaste Skinneri, and a well-flowered plant of Dendrochilum filiforme. The second prize was awarded to Sir G. H. Kendrick, of Edgbaston (gr. Mr. Macdonald), who included several Læliocattleyas, as well as some plants of the now rare Brassavola cordata, a native of Colombia. It is among the most beautiful of the Brassavolas, allied to B. nodosa, B. Perrinii, and B. tuberculata, but distinguished by its large heart-shaped porcelain-white lip, the tube-like base of which is slightly marked with dull purple. The narrow sepals and petals are white, tinted with dull green. Two to four flowers are carried on a scape. The habit is neat and compact, the stem-like pseudobulbs carry a stiff channelled leaf, and, as evidenced by the plants exhibited, it can be regarded as very free flowering. Other Orchids in the same group were several plants of Dendrobium superbiens and a single plant of D. Dearei, both now rarely met with.

The third group, from R. Manning, Esq., of Dudley, included Lælia crispa, an old species largely used by the early hybridists. It hardly compares with the present-day hybrids, yet the number of flowers on the scape, the intense crisping of the lip, and its season of flowering, gives it a certain value for late-summer decoration.

In Class XVII., one Bride and two Bridesmaids' bouquets, Mr. R. Felton, of Hanover Square, was easily first with bouquets composed entirely of Orchids, needless to say, arranged most artistically without a wasted flower. Mr. Vickers, of Leicester, was first in the hand bouquets, his exhibit being composed chiefly of Odontoglossums and Odontiodas.

The Premier award for a basket of cut flowers was secured by Mr. R. Felton, with a charming composition of Odontoglossums, Odontiodas, Cattleyas, Oncidium sphacelatum, and a long twining spike of an Oncidium in the heteranthun section, which formed an object lesson in blending and arrangement, proving again that in the hands of a skilled operator, Orchid flowers are probably better adapted to, and are of more service in, floral display work than any other flowers.

Only two groups of Orchids were staged. A Silver Medal being awarded

to Messrs. Sanders, for a small but pretty exhibit containing Cattleya Hardyana alba, Cypripedium callo-Rothschildianum, C. Rossettii Sander's var., C. Maudiæ, Dendrochilum filiforme, and Brassocattleya Euterpe. Messrs. Stuart Low & Co. received a Gold Medal for Carnations and Orchids, among them being Vanda cœrulea, a fine variety of Lc. Sargon, Lc. Ivernia Muriel Wilson, and Cattleya Warscewiczii. E.C.

Bulbophyllum Dearei.—This interesting species, which possesses something more than a botanical attraction, originally appeared in 1883, being exhibited by Lt.-Col. Deare at South Kensington. In May 1890, it was shown by the late Baron Schröder and received an Award of Merit. But instead of seeing this plant under its original name, we often come across it as Bulbophyllum Godseffianum, a name it received in June, 1890, when exhibited by Messrs. Sanders. There does not appear to be any distinction between the two, except that the plant first called B. Godseffianum may have been a fine variety of B. Dearei.

Orchids of Longs Peak, Colorado.—When Mr. T. D. A. Cockerell, accompanied by his wife, paid a visit to Longs Peak Inn, Colorado, a special effort was made to find Orchids, but only three were obtained, these being Limnorchis viridiflora, Chamisso; in a swampy place at Estes Park Village, Lysiella obtusata, Pursh; and Cœloglossum bracteatum, Willd. The district has an altitude of 7,500 to 11,400 feet, and an account of the plants found is published in *Torreya*, *vol.* 13, *No.* 12. Of the Lysiella, it is remarked:—"Found by Mrs. Cockerell, who was so fortunate as to observe a moth visiting the flowers, evidently serving as an agent in pollination. A specimen captured carried a bright yellow pollinium on its head, the base of the stalk attached to the front of the moth's left eye. The moth proved to be a perfectly typical Rheumaptera tristata, a species common to the northern parts of America and Europe. Rydberg states that Lysiella obtusata occurs in a single European locality in northern Norway. It is interesting to know that it may there be visited by the same species of moth. Cœloglossum bracteatum appears to be very rare in Colorado; Rydberg merely cites it from Colorado, adding 'exact locality not given.' Nelson gives the distribution as 'Northern Wyoming, eastward and to the Atlantic,' thus excluding Colorado altogether. One plant is perfectly characteristic of the species."

Orchid Challenge Cups.—At the special display of Orchids to be held at the Royal Horticultural Society on November 1st, 1921, two valuable Challenge Cups will be offered for competition. Any competitor winning one of them three times will become the owner of it.

EPIPACTIS LATIFOLIA.—The *Journal of Botany* for September, 1920, contained a note on the British species of Epipactis. In the issue of February, 1921, is published "an attempt to justify the position there taken up as to the forms hitherto generally assigned to E. latifolia or media." The authors, Rev. T. Stephenson, D.D., and Mr. T. A. Stephenson, M.Sc., are of opinion that the whole situation, as far as British forms are concerned, has been thoroughly cleared up by the skill and patience of Col. Godfery. The amount of light does not make much difference to the tint of the flowers. The authors saw under the same bush, in flower at the same time, a pure green spike next to a bright purple one, and they also found purple flowers in deep shade, and dull green ones in profusion by the roadside in quite sunny positions. At Southport the pale green viridiflora is said to grow right out in the open, receiving every hour of sunshine.

ONCIDIUM ORNITHORHYNCHUM.—Although this species has been known for more than a century, it never seems to become too plentiful in collections. There are two forms of the coloured type, one having darker and larger flowers. In 1873 an albino variety appeared in Mr. John Day's noted collection at Tottenham and was described as albiflorum by Reichenbach (*Gard. Chron.*, 1873, *p.* 503). He remarked: "A very striking variety with a whitish flower, only the calli being yellow. When I opened the box, I perceived the strongest smell of Gymnadenia conopsea imaginable. Mr. Day, whom I have to thank for the very ornamental inflorescence, had not even remarked the smell, though we all admire his eminent powers of observation. The moral is, the smell may have been developed later, as there are plants, and Orchids, which only have a perfume at certain times; hence we should be very cautious in judging others. I remember Mr. W. Saunders declared the smell of a Catasetum to be that of lemons, while I found it to be like the essence of roses. Again Mr. Saunders and myself found the smell of Cœliopsis like that of hyacinths, when Mr. Bateman judged them to smell of a druggist's shop. It is well-known how the intensity changes the effect on our nervous olfactories, as one can best judge from fruits of Coriander, which, bug-like as they smell, give, when the oil is well expressed, a most pleasant perfume." Well, whatever Reichenbach's opinion seemed to have been regarding the smell, the point that concernes us is the albino nature. Mr. B. S. Williams purchased a portion of Mr. Day's stock and duly distributed it to their customers, and it is worthy of note that at a subsequent auction sale, one of the plants realised the sum of fifty guineas, so much was this variety then esteemed. One other point must be mentioned: Why has the name of this variety been changed from albiflorum to album?

HOW PLEIONE HUMILIS PROPAGATES ITSELF.

By BN. GHOSE, Rajshahi, India.

IN October, 1920, during my excursions in the neighbourhood of Darjeeling, I met a host of Pleione humilis. They love to grow on moss-grown trunks of trees, sometimes on the edges of precipitous mossy rocks, and rarely on bare sandy soil. I observed a large number of youngsters, in various stages of growth, below the elder plants. At first, I thought that they were the outcome of self-sown seeds of P. humilis, but I asked myself: Were are the young capsules that will mature next season? Curiously enough, I observed no capsule or trace of them anywhere, although I examined no less than a hundred plants. Whence came the young ones then?

Now the old pseudobulbs had a tuft of hair-like appendages at their apex, so I asked myself: Was this curious tuft anything to do with the multiplication of the plant. The hairs of the appendage are pale white, long and curved. In some, I found the upper portion of the thread pale green and the lower portion pale chocolate. Also, the threads were not in equal numbers on all the pseudobulbs; they varied considerably. In a sequestered nook I found a pseudobulb with only one thread at its apex. This thread was rather large and developed. On examining it through my glass I found it to be a miniature pseudobulb with a very small leaf at its apex. This led me to suppose that the threads were the future plants, a supposition that was proved beyond doubt in my next excursion.

After the fall of the leaves, the appendages appear and continue to develop for about a year. They then separate themselves just before the advent of the rains, and are caught on the branches or trunks of trees that are overgrown with moss, where they root and develop into perfect plants. It thus appears that vegetative reproduction is the rule with this plant. Amidst snow and frost, Pleione humilis displays its charming white flowers, unseen and uncounted by bees and insects that usually retire at this period of the year to the warmer valleys below. Fertilisation and consequent production of seed being difficult, Nature has probably adopted this vegetative means of reproduction in order to keep the species intact.

After reading the above very interesting discovery, one cannot help feeling convinced that Mr. Ghose has cleared up a problem which has been in existence for many years. As far back as May, 1849, Sir Joseph Hooker collected specimens at Sikkim of Pleione Hookeriana which had similar appendages. He also recorded the same in connection with P. præcox, remarking: "A monstrous state bears imperfectly developed pseudobulbs crowned with a crinite tuft of narrow bulbils, each with two setæ." (*Fl.*

Brit. Ind., v. p. 840). There is at Kew a sheet of dried specimens, collected by Griffith, four out of six of which have the above described peculiarity. Mr. R. A. Rolfe thought that these tufts of setæ replaced the leaf, and the course of their development to be a gall-growth, due to insect puncture, but expressed the opinion that observations on the spot would be acceptable. These have now been carried out by Mr. Ghose, and we hope he will favour us with some further interesting communications.

Pleione humilis was discovered by Dr. Francis Buchanan, in Upper Nepal, and was first figured and described by Sir James Smith in 1805. It was introduced to cultivation by Thomas Lobb, who sent it from the Khasia Hills to Messrs. Veitch in 1849. It is also found at Sikkim, at elevations of 7,000-8,500 feet, and flowers during February and March. To the European residents of Darjeeling it is known as the Himalayan Crocus.

ORCHID PROPAGATING BY BULBILS.—Orchids which propagate by bulbils are not common, but the North American Microstylis ophioglossoides seems to come under this heading. A note by Harriet A. Nye (Rhodora, vi., p. 79) states that when preparing a specimen for the Herbarium she observed that several bulblets had formed underneath the loose outer coat of the bulb, one of them had already sent up a tiny leaf on a stem half-an-inch long.

COLOUR AND ODOUR OF CAPE ORCHIDS.—It has long been recognised that the colours of Orchid flowers play an important part in the economy of their fertilisation. Regarding the Orchids of the Cape Peninsula, Mr. Harry Bolus, F.L.S., in his book on these plants published in 1888, remarks: "Blue and red flowers have been supposed to be the most attractive colours to insects; yellow and green less so; while white flowers are probably most visited by night-moths. It is not always easy to define accurately and briefly the colours of Cape Orchids, since they are often variously combined in the same flower. I have endeavoured to arrange them in groups as to their predominant colours, with the following results: Green, 9 species; yellow, 32; brown, 8; red, 24; blue and blue-purple, 14; white, 16. Liparis has green flowers; Eulophia, brown, yellow, and white; Bartholina, purple and white; Satyrium, all colours named above, except blue; Disa, all the colours named above; Dispersis, red, yellow, and green; Corycium, yellow and white; Pterygodium, yellow and purple; Ceratandra, yellow, white, and red. With respect to the odours exhaled by the different species, it is noticeable that, speaking generally, those of red hues are the least fragrant; those with white flowers most so. The scent of some (chiefly species with yellow flowers, as Corycium orobanchoides, Pterygodium catholicum, &c.), is often heavy and unpleasant."

ORCHID CULTIVATION ON BLOCKS OF WOOD.

AS many of the early accounts of collectors mention the discovery of Orchid growing on the trunks and branches of trees, it is not surprising that something similar should have been made use for cultivating the plants under artificial conditions. About a century ago Dean Herbert wrote to the Horticultural Society of London:—"I found no difficulty in establishing Epidendra on the stems of a tree by cutting a notch in the bark and inserting the plant like a graft and tying moss about it to support it till the young roots had attached themselves to the bark, but for want of sufficient moisture they did not make much progress. I have since adopted the following method of irrigating them—by placing above them a pot of water with a hole at the bottom through which a string passes nearly as large as the aperture, by means of which the water is gradually and continually conducted to the upper part of the parasitical plant."

Miltonia Clowesii on a block of wood at Messrs Loddiges in 1842. (Copied from Paxton's *Magazine of Botany*).

In 1823 a portion of the end of the propagating house in the Royal Gardens, Kew, was set aside for the special cultivation of Orchids. A bed was formed consisting of loose turfy soil, interspersed with small portions of stems of trees on which plants were placed, most of them rooting into the soil and clinging to the pieces of wood. A year or so later, the Curator of the Botanic Garden, Trinidad, sent to Kew many of the Orchids indigenous to the island, some of them being sent growing on portions of branches as cut from the trees. Instructions as to how the plants were to be treated were also sent by the Curator, and some improvement in English Orchid culture took place.

The idea that many kinds of Orchids could only be successfully cultivated on blocks of wood remained very firm in the minds of nearly all growers for a very long time. In 1845 J. C. Lyons advised the plants to be fastened on large branches of trees covered with moss, which he said was the most natural of all modes of treating them. The size of branches of oak were to be from 4 to 6 feet long and from 4 to 8 inches in diameter

Several specimens were to be attached to each, and if judiciously selected would flower at different seasons of the year. Present-day cultivators may wonder how such huge logs were to be taken down from the roof and dipped in water, but Lyons got over the difficulty by using them as supports to the roof, and he was careful enough to first place the lower end in a pan of water in order that woodlice and snails could not make these wooden pillars a hiding place.

Thomas Appleby, in his Orchid Manual, published about 1860, wrote :— "To the uninitiated nothing in culture seems more strange than that flowering plants should grow and bloom on dead logs of wood." But for how long they continued to flourish we are not informed, probably a couple of seasons, when they would be replaced by newly-imported plants.

BRASSIA LONGISSIMA.

TWO Brassias worthy of cultivation are B. Lawrenceana, named after Mrs. Lawrence, in whose collection at Ealing it flowered in 1840, and B. longissima. The latter is frequently mentioned as a variety of the former, but it is, in fact, distinct. In 1868 Reichenbach described a plant from Costa Rica as B. Lawrenceana var. longissima, remarking that notwithstanding the unusual length of the segments, he could not help thinking it was but a form of the old B. Lawrenceana. But Messrs. Veitch years ago suggested that the two were distinct, and that the so-called variety may hereafter receive specific rank (*Man. Orc. viii.* 125). In size and colour, B. Lawrenceana considerably surpasses Lindley's type, which is figured in the *Botanical Register*, 1841, *t.* 18.

At the Manchester Orchid Society, July 21, 1921, a First-class Certificate was awarded to B. longissima when exhibited by Dr. F. Bedford, of Fulford, York. We have examined the flower spike and find that the long sepals, from which the name is derived, measure no less than eight inches in length, which is one inch more than the measurement given by Messrs. Veitch in their *Orchid Manual*. This plant certainly deserves the name longissima, and considering that two spikes were carried on the same bulb, the additional award of a Cultural Certificate was very appropriate.

Brassia is closely allied to Oncidium, and of the thirty or more known species the two most commonly met with are B. verrucosa and B. brachiata. All are apparently lovers of much moisture, and when under cultivation care must be taken that good drainage is provided to allow the surplus water to escape, otherwise the compost will rapidly became sour and cause the plants to pass into a sickly condition. An intermediate house where a shady position can be found will prove a successful place.

DENDROBIUM SUPERBUM AND VAR. DEAREI.

OUR illustration was prepared from a photograph sent by Mr. M. J. Pope, of Naugatuck, Conn., U.S.A., who at one time had over 400 plants of Dendrobium superbum. For want of room these were placed as many as

DENDROBIUM SUPERBUM AND VAR. DEAREI.

could be got into baskets about six inches in diameter, numbering in all about 80. When the flowering season came it was found that two white forms were growing in the same baskets with the type. The flowers were of the purest white throughout, with the exception of a faint lemon yellow

flush in the tube of the lip. Although they had lost their purple pigment, they still retained the peculiar rhubarb scent that is a well-known characteristic of the species, but it was not quite so strong. The variety Dearei appeared in the collection of Lt.-Col. Deare, of Englefield Green, in 1882, receiving a First-class Certificate from the Royal Horticultural Society on April 11th of the same year under the name of D. macrophyllum var. Dearei. It was well figured by Mr. Day in April, 1886 (*Coll. Draw. xlix. t.* 49), from a plant then in Baron Schröder's collection. The variety Burkei named in 1883 has a light purple throat, while in the variety Huttoni, first known in 1869, the same part is bright purple.

Dendrobium superbum was one of the discoveries of Cuming, in the neighbourhood of Manila, during his travels in the Philippine Islands, 1836-40, when many splendid Orchids were discovered and sent to European amateurs. Cuming sent this Dendrobe direct to Messrs. Loddiges, in whose nursery at Hackney it flowered in 1839. It was described in the *Botanical Register* of that year under the name D. macrophyllum by Dr. Lindley, who overlooked the fact that six years previously another species had been described under the same name.

D. superbum delights in plenty of warmth and moisture, and in some of its native localities the bulbs attain a length from 6-7 feet, and have been known to carry as many as 100 flowers on each. Under cultivation, these figures are not obtained, mainly on account of insufficient heat and moisture, but results quite equalling other Dendrobiums are generally achieved.

LÆLIA DAYANA.—This pretty little species was described by Reichenbach in 1876, from a flower sent by Mr. John Day, of Tottenham, after whom it was named. "An unexpected and lovely plant," states the author, "Take a Lælia pumila and give the lip a very dark purplish border, similar very dark veins covered with dark low lamellæ; this is the Lælia Dayana, named in honour of my excellent correspondent, Mr. Day, who most kindly sent me seven glorious flowers of this new Brazilian plant." Two somewhat similar species are L. pumila and L. præstans, but L. Dayana can be easily distinguished by the five to seven narrow keels which traverse the lip, being higher in the centre and of a rich dark purple colour. The flowers are produced without any protecting sheath, and about the month of September and October. A First-class Certificate was awarded to the plant exhibited at the R.H.S. by Sir Trevor Lawrence, Bart., in 1877, but strange to say it did not flower until the month of January. Of late years this neat-growing cool-house species has become very scarce in cultivation, and on that account it is pleasing to receive a fine typical example from the collection of Dr. Fred. Bedford, who cultivates it successfully at Dovercourt, Fulford, York.

CULTURAL NOTE

By H. G. ALEXANDER, Orchid Grower to Lt.-Col. Sir GEORGE HOLFORD, K.C.V.O., Westonbirt.

THE brilliant weather of this never-to-be-forgotten summer, which continued up to the second week in September—the time of writing—has been ideal for all sun-loving Orchids that enjoy warm air and bright sunshine. In this area we have lately experienced many days of continuous sunshine from a sky entirely unflected by cloud, and the thermometer has mounted to mid-summer levels, the proximity of autumn being betrayed only by the cool morning mists. This favourable season should result in strong solid growth that may reasonably be expected to produce satisfactory flower-spikes; moreover, the beneficial effects upon many Orchids may be looked for next year in new growth of greater vigour than usual. With the shortening days and the decreasing influence of the sun, much less shading will be needed. It is impossible to give precise directions as to diminishing the shading in autumn, much depending on the aspect of the house and the arrangement of the plants, and to the genera to which the plants belong. By the end of September, the foliage of all Orchids should be sufficiently hard to need but very little protection from the sun, the roller blinds only being required during the middle hours of the day when the sun shines very brightly, and then they should not be allowed to remain down longer than is absolutely necessary. The aim of the cultivator should be to make the most of the sunshine at this season, so as to thoroughly harden the growths of all Orchids, thus enabling the plants to pass safely through the winter. Directly the blinds can be dispensed with, they should be taken down and dried thoroughly before putting them in store for the winter, making a note of any that require repairing or replacing for next season. Supplying water to the roots also requires much more judgment now than when all the plants were in active growth; Orchids cannot be treated collectively in this respect. The habits of the various kinds, the state of the growth, and the condition of each plant must be separately considered, and the treatment varied accordingly. Many of the larger, distichous-leaved Orchids are still growing freely, and require plenty of moisture till the roots show, by the white film closing over the points, that their season of rest is at hand. After this, less water will be needed until in winter only sufficient should be given to keep both roots and foliage in a plump, healthy condition. In the case of pseudobulbous Orchids that are now fast completing their season's growth, it is a mistake to withhold or lessen the water supply too suddenly, as the roots of many kinds are most active just when the pseudobulbs are swelling. There should be less damping-down than hitherto, as the weather at this season promotes good atmospheric conditions within

the house. The longer nights and cooler atmosphere may necessitate the use of a little fire-heat in the cooler divisions, it being better to have some warmth in the pipes, with the ventilators open a little, than to close the house without heat, as a saturated atmosphere, accompanied by a low temperature, is most injurious to all Orchids.

DENDROBIUM.—The deciduous section of this genus, many kinds of which produce their flowers early in winter, are rapidly completing their season's growth. When the apical leaves of the pseudobulbs are fully developed, the plants need much drier conditions, not sufficient to cause shrivelling, but less water at the roots than at their growing season. It is essential that these plants be accommodated where they can be afforded plenty of fresh air, and where they can obtain the maximum amount of sunshine to thoroughly harden the growths. When the latter is completed the plants should be rested in a well-ventilated house, in which an intermediate temperature is maintained. Backward plants should be given every encouragement to complete their season's growth before the days get shorter. These remarks also apply to the evergreen species that flower in the spring. The species D. Dalhousieanum, D. moschatum and D. fimbriatum are always late in finishing their growths, and the plants should be afforded liberal treatment until the terminal leaf is visible. D. Brymerianum is also a late growing kind. These evergreen species should be grown in the warmest division at all seasons, but during the winter, while the plants are resting, infrequent waterings will suffice to keep the pseudobulbs plump and the roots healthy. Plants of D. Phalænopsis Schröderianum have their flower-spikes well advanced, if not already in bloom. Foggy weather of late autumn has a pernicious effect on these attractive flowers, and it is an advantage, especially in the vicinity of large towns, to have the plants in bloom early. For so long as the plants are carrying flower spikes, a moderate amount of water should be afforded the roots, but after these have been removed, sufficient moisture only is required to keep the pseudobulbs from shrivelling. During the plant's inactive period, an intermediate temperature is best for them. D. formosum blooms at various times, but usually in late summer and autumn. The plants grow well in company with the last-named species, requiring an almost unshaded position, where there is plenty of heat and moisture. This species does not require large supplies of water, even during the growing season, and in winter very little moisture will suffice to keep the pseudobulbs from shrivelling. D. infundibulum belongs to the same section as the last-named species, and the cultural treatment is similar, except that it grows best in a cool-intermediate temperature.

VANDA CŒRULEA.—This Orchid, now to be seen in flower, produces much better coloured blooms in districts where the atmosphere is pure than

in the vicinity of large towns, and plants flowering during late summer and early autumn always develop better blooms than in late autumn and early winter, owing to the better light. It is no easy matter to maintain this species in a robust condition. A constant supply of fresh air and plenty of sunlight are necessary to obtain good results. The troublesome watery spots that appear in the leaves and afterwards turn black are most prevalent during the winter, when the leaves are most active. Given abundance of light and air during the growing season, the foliage becomes hard and solid and not so liable to spotting. The only method of combatting the trouble is to avoid an excess of moisture, both at the roots and in the atmosphere, and, at the same time, to keep the house well ventilated whenever the weather is favourable. During the resting period the plants should be given a light position in a house having an intermediate temperature, and water given only when the leaves show signs of shrivelling.

Vanda Kimballiana and V. Watsonii.—Two of the most charming and fascinating plants in the whole Orchid family. The flower spikes of these species are well advanced, and ere the blooms commence opening, the plants should be placed in slightly warmer and drier conditions, where the flowers will develop better, and not be so likely to become spotted as in a cool, moist atmosphere. The flowering season over, the fleshy roots should be afforded less water, reducing the amount gradually. During winter the plants may be rested in a cool-intermediate house.

Thunias.—After these plants have done growing and the leaves have fallen they require a thorough season of rest. They should soon be in that stage, and during the resting time they will not require any water at their roots. The pots may be placed on their sides on a shelf out of sight, where the temperature does not fall lower than 50 to 55 degrees.

Dendrobium Wardianum.—This species was originally introduced by Simons in 1856, and soon afterwards flowered in Messrs. Jackson's Nursery, at Kingston, being at first figured as a variety of D. Falconeri, but afterwards under the above name in honour of Dr. Ward, of Southampton, who also flowered it. These original plants were collected in Assam, and have slender stems. The stouter Burmese form was introduced by Messrs. Low & Co., in 1875, and was figured and described as D. Wardianum var. Lowii, and subsequently as D. W. giganteum. The Burmese form grows intermixed with D. crassinode and hybridises with it. D. Wardianum candidum has pure white flowers, but maintains the yellow disc and the two eye-like brown spots. In the variety album these brown spots are absent.

CERTIFICATED ORCHIDS.

(*Continued from p.* 95).

OWING to the suspension of the *Orchid Review* for the first six months of the current year, the following Certificated Orchids are now published in order to make our records complete :—

AWARDS OF MERIT.

CATTLEYA MARTELLA (Fabia × Trianæ), from Baron Bruno Schröder, Nov. 2nd, 1920.—Sepals and petals pure white, the broad lip purple with a thin white margin.

BRASSOCATTLEYA MRS. PITT (C. Octave Doin × Bc. Digbyano-Warneri), from H. T. Pitt, Esq., Nov. 2nd, 1920.—Of soft rose pink colour, the fringed labellum having a yellow disc.

CATTLEYA PICOTEE (Hardyana × Octave Doin), from W. R. Fasey, Esq., Nov. 2nd, 1920.—A perfectly formed flower with white sepals and petals tinged lilac; the labellum with the front ruby-purple, and a yellow patch on each side.

LÆLIOCATTLEYA MOMUS, BRYNDIR VARIETY (Lc. rubens × Octave Doin), from Dr. Miguel Lacroze, Nov. 16th, 1920.—A large flower of excellent formation, and bright rosy mauve colour.

BRASSOLÆLIOCATTLEYA THE BARONESS, FASEY'S VARIETY, from W. R. Fasey, Esq., Nov. 16th, 1920.—The large flowers of canary yellow colour, the lip having the front lobe rose-tinted and fringed.

ODONTOGLOSSUM RED ADMIRAL (eximium × Lambardianum), from W. R. Fasey, Esq., Nov. 16th, 1920.—A white flower tinged with lilac, and bearing large claret blotches.

LÆLIOCATTLEYA FULVA, from Lt.-Col. Sir George Holford, K.C.V.O., Nov. 16th, 1920.—The large flower of chrome yellow colour, the crimped lip tinged and veined with rose-purple.

CYPRIPEDIUM WARRIOR (Alcibiades × Lord Wolmer), from Messrs. Sanders, Nov. 30th, 1920.—A noble flower having the dorsal sepal $3\frac{1}{2}$ins. across, and the petals nearly 2ins. wide. Dorsal sepal white with dark claret blotching.

CYPRIPEDIUM BACCHUS (Nydia × Earl of Tankerville), from Lt.-Col. Sir George Holford, K.C.V.O., Nov. 30th, 1920.—Dorsal sepal white with dark claret lines of colour.

ODONTOGLOSSUM ROSINA MAGNIFICUM (eximium × Lakiniæ), from W. R. Fasey, Esq., Nov. 30th, 1920.—Of rich claret colour with white lines and margin.

BRASSOLÆLIOCATTLEYA CISSIE (Lc. Myra × Bc. Mrs. J. Leeman) from Messrs. J. & A. McBean, Nov. 30th, 1920.—Flowers of bright chrome yellow colour, with rose markings on the front of the lip.

SOPHROLÆLIOCATTLEYA FORMA (Slc. Niobe × Lc. Haroldiana), from A. J. Hollington, Esq., Nov. 30th, 1920.—Flower resembling a Læliocattleya, rosy mauve, with deep ruby red lip.

ODONTOGLOSSUM ARDENTORA (ardentissimum × Dora), from W. R. Fasey, Esq., Dec. 14th, 1920.—Flowers heavily blotched with dark violet and margined with white.

CYPRIPEDIUM MEMORIA F. M. OGILVIE (Curtmannii × Pyramus), from Messrs. Sanders, Dec. 14th, 1920.—A well-proportioned flower, dorsal sepal white, with dotted heavy lines of dark claret colour.

ODONTOGLOSSUM RUFUS, from W. R. Fasey, Esq., Jan. 11th, 1921.—A large flower of unrecorded parentage, claret red in colour.

ODONTOGLOSSUM FAUSTINA (eximium × Dora), from W. R. Fasey, Esq., Jan. 11th, 1921.—Of light purple colour, with broad white margin.

ODONTIODA MADELINE, MCBEAN'S VARIETY, Jan. 11th, 1921.—A fine result with broad segments of reddish colour, tinged with yellow.

ODONTIODA CILLEHAM VAR. ADA EVANS, from Messrs. J. & A. McBean, Jan. 11th, 1921.—Large flowers of reddish colour, margin of white.

ODONTONIA CERES (M. Bleuana × Odm. Lawrenceanum), from Messrs. Charlesworth & Co., Jan. 11th, 1921.—Of Miltonia formation, straw yellow in colour, with reddish rose area in front of the crest.

CHARLESWORTHARA NOBILIS (Oncidium macranthum × Miltonioda Ajax), from Messrs. Charlesworth & Co., Jan. 11th, 1921.—A trigeneric hybrid of chocolate red colour, with yellow margin.

CYMBIDIUM MARTIN (Lowio-grandiflorum × Parishii Sanderæ), from Lt.-Col. Sir George Holford, K.C.V.O., Jan. 25th, 1921.—Sepals and petals pale yellow, lip white, with a dotted band of purple.

ODONTIODA NIOBE, FASEY'S VARIETY (Odm. Jasper × Oda. Bradshawiæ), from W. R. Fasey, Esq., Jan. 25th, 1921.—Of rich claret red colour.

ODONTOGLOSSUM RADIANT, MCBEAN'S VARIETY (Dora × Alexandrina), from Messrs. J. & A. McBean, Jan. 25th, 1921.—The broad sepals and petals light rose pink, dotted with red on the inner halves.

CATTLEYA MONARCH BRUGENSIS, from Messrs. Sanders, Jan. 25th, 1921.—Flowers of the largest size, and of light rose colour.

ODONTOGLOSSUM TRIDENT (eximium × King Albert), from Messrs. Flory & Black, Jan. 25th, 1921.—Of claret red colour, front of lip white.

BRASSOCATTLEYA GATTON SNOWFLAKE (C. chocœnsis alba × Bc. Thorntonii), from Sir Jeremiah Colman, Bart., Feb. 8th, 1921.—A fine pure white flower of perfect formation.

DENDROBIUM NOBILE SIR F. W. MOORE, from Messrs. Armstrong & Brown, Feb. 8th, 1921.—The result of crossing D. nobile nobilius with D. nobile Elephant.—The large flowers rosy mauve, centre of lip deep maroon.

LÆLIOCATTLEYA H. T. PITT, FASEY'S VARIETY, from W. R. Fasey, Esq., Feb. 8th, 1921.—The broad sepals and petals rosy mauve, lip crimped and reddish purple.

ODONTIODA COLINGE VAR. ATHENE (Oda. Coronation × O. crispum), from G. W. Bird, Esq., Feb. 8th, 1921.—A white flower edged with lilac, and having central purple markings.

ANGULOCASTE COOPERI (Anguloa Cliftonii × Lycaste cruenta), from Messrs. Sanders, Feb. 8th, 1921.—Flower of Lycaste formation, pale yellow, with purple markings at the base of the petals.

LÆLIOCATTLEYA ENID ALBA VAR. KATHLEEN, from Messrs. J. & A. McBean, Feb. 22nd, 1921.—A white flower with rose-purple veining in front of the yellow disc.

LÆLIOCATTLEYA EUNICE ALBA VAR. CONSTANCE (L. anceps Schröderiana × C. chocœnsis alba), from Messrs. J. & A. McBean, Feb. 22nd, 1921.—Flowers intermediate in form, and pure white.

DENDROBIUM BUTTERFLY, LOW'S VAR. (Ainsworthii × chessingtonense), from Messrs. Stuart Low & Co., Feb. 22nd, 1921.—A fine flower of cowslip yellow colour, the labellum having a deep maroon disc.

CYMBIDIUM ALEXANDERI GIGANTEUM, from Mrs. Bischoffsheim, March 8th, 1921.—Large flowers, wax-like in texture, blush-white with purple lines.

ODONTOGLOSSUM RUBENS VAR. MRS. HAROLD SMITH, from Messrs. Sanders, March 8th, 1921.—The inner two-thirds of the segments deed violet, the margins white.

ODONTOGLOSSUM BULLECOURT, from H. T. Pitt, Esq., March 8th, 1921.—Of dark red colour, with white lines between the blotches.

CYMBIDIUM EXCELSIOR (Schlegelii × Pauwelsii), from Messrs. J. & A. McBean, March 8th, 1921.—A creamy white flower of large size with rose spotting on the lip.

LÆLIOCATTLEYA PETROGRAD, BLETCHLEY PARK VARIETY, from Sir H. S. Leon, March 22nd, 1921.—A superb flower with broad pure white sepals and petals. front of lip ruby-purple.

ODONTOGLOSSUM GLORIETTE, FASEY'S VARIETY, from W. R. Fasey, Esq., March 22nd, 1921.—The large flowers covered with reddish blotching.

ODONTIODA GRENADIER (Sanderæ × Chanticleer), from Messrs. Sanders, March 22nd, 1921.—A many-flowered spike of dark scarlet colour, front of lip light lilac.

ODONTOGLOSSUM BARNABY RUDGE, from Messrs. J. & A. McBean, April 5th, 1921.—An immense flower of violet-purple colour, margin and front of lip white.

ODONTOGLOSSUM ROBERT VENABLES (eximium × Rosella), from W. R. Fasey, Esq., April 5th, 1921.—A grand flower of which three-fourths is blotched with dark violet colour.

Cattleya Mary Sander, from Lt.-Col. Sir George Holford, K.C.V.O., April 5th, 1921.—Flowers white, with chrome yellow disc to the labellum.

Odontoglossum Lady Avice Menzies, from Lt.-Col. Sir George Holford, K.C.V.O., April 5th, 1921.—A pretty flower with clearly defined violet-red blotches.

Miltonia Hyeana, The Dell variety, from Baron Bruno Schröder, April 26th, 1921.—Flowers white, with a rose flush on the lip, which has a blackish purple disc.

Odontoglossum Desdemona (illustrissimum × Rossii), from W. R. Fasey, Esq., April 26th, 1921.—Inner parts of the segments violet-purple, the outer parts yellow; lip white, and with a few purple markings.

Odontoglossum Chu Chin Chow (Rossii × aspersum), from W. R. Fasey, Esq., May 10th, 1921.—An interesting hybrid, with flowers of reddish brown and yellow; lip white.

Cultural Commendations.

To Messrs. Armstrong & Brown, for a fine plant of Odontioda Alcibiades, with a five-branched spike carrying 30 flowers. Jan. 11th, 1921.

To Messrs. J. & A. McBean, for a grand plant of Cattleya Maggie Raphael alba, with ten flowers on two spikes; and for a fine specimen of Odontonia brugensis, with several spikes. Jan. 11th, 1921.

To Mr. H. J. Gillett, Orchid grower to Col. Stephenson R. Clarke, for a well-grown plant of Platyclinis glumacea, with over 40 spikes. Feb. 22nd, 1921.

To Mr. Collier, Orchid grower to Sir Jeremiah Colman, Bart., for a splendid plant of Dendrobium speciosum nitidum, with a profusion of flowers. Feb. 22nd, 1921.

To Mr. J. T. Barker, Orchid grower to His Grace the Duke ot Marlborough, for a grand plant of Cattleya Suzanne Hye de Crom, variety citrina. March 22nd, 1921.

To Messrs. J. & A. McBean, for a fine example of Cattleya Suzanne Hye de Crom, with six flowers. March 22nd, 1921.

To Mr. E. J. Seymour, Orchid grower to W. R. Fasey, Esq., for a well-cultivated plant of Miltonia Hyeana, with six spikes bearing 27 large flowers. May 10th, 1921.

Certificate of Appreciation.

Recommended to the Scientific Committee, Mon. H. Graire, Amiens, for Odontocidium Graireanum (On. macranthum × Od. Thompsonianum), with a slender spray of bronze-purple flowers. May 10th, 1921.

Preliminary Commendation.

Odontioda Scarlet Emperor (C. Nœtzliana × Odm. Her Majesty) from W. R. Fasey, Esq.—A perfectly formed flower of pure scarlet colour. March 8th, 1921.

ROYAL HORTICULTURAL SOCIETY.

August 23rd, 1921.

MEMBERS of the Committee present: Sir Harry J. Veith (in the chair), Prince Tadashige Shimadzu, Messrs. Jas. O'Brien (hon. sec), Fred. K. Sander, Pantia Ralli, J. E. Shill, S. W. Flory, A. McBean, and Gurney Wilson.

AWARDS OF MERIT.

Cattleya Prince Shimadzu (Hardyana × Tityus), from Messrs. Flory & Black.—A bold flower of rich purple coloration, the broad petals carrying forward the qualities of C. Mossiæ derived through the latter parent, the extensive labellum dark crimson and with gold veining in the throat.

Læliocattleya Sargon (Lc. Lustre × C. Hardyana), from Pantia Ralli, Esq., Ashtead Park, Epsom.—A large flower of deep rose-purple colour, the wide labellum tinged with crimson and with bright yellow areas on the side lobes.

Læliocattleya Canary (C. Fabia alba × Lc. Thyone), from Pantia Ralli, Esq.—A pleasing flower of medium size, of golden yellow colour, the labellum tawny.

Læliocattleya Allamanda (Lc. Helium × C. aurea), from Messrs. J. & A. McBean.—This pretty hybrid carried a medium-sized flower with bright yellow sepals and petals, the lip having the front lobe rich crimson.

GROUPS.

H. T. Pitt, Esq., Rosslyn, Stamford Hill, was awarded a Silver Flora Medal for a very interesting group containing the fine Cattleya Hardyana var. Countess of Derby, Lælia monophylla, with numerous flowers, Cypripedium glaucophyllum, C. barbatum, the elegant Zygopetalum Blackii, *Z.* citrinum, a good form of Brassocattleya Sofrano, and several Masdevallias and other botanical attractions.

Messrs. Hassall & Co., received a Silver Banksian Medal for an exhibit of specially fine varieties of Cattleya Hardyana, most of them having from 4-5 flowers on a spike, the sepals and petals pure white, the labellum rich purple-crimson. Also some choice forms of Blc. Muriel, a delightfully coloured hybrid with large rose-pink flowers, Cattleya Adula, as well as fine varieties of C. Sybil (iridescens × aurea), in which the golden-yellow tints are seen to perfection.

Messrs. J. & A. McBean, were awarded a Silver Banksian Medal for a group in which were fine varieties of Cattleya Lord Rothschild, the pretty Oncidioda Cora and O. Felicity, also Cypripedium Maudiæ magnificum and Cattleya Hardyana alba. An interesting plant was a cross between Cattleya Dowiana and C. aurea, quite intermediate in growth and form of flower.

Messrs. Sanders received a Silver Banksian Medal for an exhibit containing the bright Læliocattleya Glory, Cattleya Hardyana alba, C. Thebes (aurea × Adula), C. Enid, a fine flower, several excellent Cypripediums, including King Arthur var. Burgoyne, and a well-flowered plant of C. gigas Corndean variety.

Pantia Ralli, Esq., staged Cattleya Eleanor alba (Hardyana alba × Warscewiczii F. M. Beyrodt), a large flower with white sepals and petals. Also Cattleya Adula excelsa, with a spike of three fine blooms.

Baron Bruno Schröder, Englefield Green, exhibited the superb Brassolæliocattleya Amber, by far the finest of its kind, and to which a First-class Certificate had previously been awarded. The flower measured six inches across, all the segments being well formed, and of clear yellow colour, the fringed labellum having a zone of rose-colour near the margin.

Messrs Stuart Low & Co., staged Læliocattleya Oenius (C. Enid × Lc. Coronis), with flowers of crimson-flesh colour, the lip purplish. A very pretty hybrid.

September 6th, 1921.

Members of the Committee present: Sir Harry J. Veitch (in the chair), Prince Tadashige Shimadzu, Messrs. Jas. O'Brien (hon. sec). Richd. G. Thwaites, J. Wilson Potter, Stuart Low, A. McBean, A. Dye, Fred. K. Sander, W. J. Kaye, Gurney Wilson and C. B. Tahourdin (visitor).

Although several good Orchids came before the Committee, no awards were made, the paintings proving that they did not excel plants previously certificated.

GROUPS.

His Grace the Duke of Marlborough, Blenheim Palace, Woodstock (gr. Mr. J. T. Barker) was awarded a Gold Medal for a splended exhibit of over one hundred finely-flowered specimens. There were many special varieties of Lc. Soulange; Lc. Carmencita, with yellow sepals and petals; Lc. Rajah, of rich coloration; Cattleya Hardyana alba; A large blush-white Bc. Virginia; Bc. Maroniris, very pretty; the new Bc. Blenheim Gladys; several well-flowered plants of Cypripedium Maudiæ, and Vanda cœrulea.

J. J. Bolton, Esq., Claygate Lodge, Claygate (gr. Mr. Lynes), received a Silver Flora Medal for an excellent exhibit of Cattleya Hardyana, with three flowers on a spike; C. aurea; C. Regina, a fine flower of large size; C. Naida exquisita, copper colour, with orange disc to the lip; Slc. Niobe, Slc. Felicia, both richly-coloured; and Cattleya Adula var. Dreadnought, an unusually large flower.

Messrs. Charlesworth & Co. were awarded a Silver Flora Medal for a group of choice hybrids, including Cattleya Hesta, C. Iris, C. Kitty Wren,

C. Desdemona and Miltonioda Harwoodii. Among the species were Dendrobium superbiens, richly coloured, the singular Bulbophyllum, with an umbel of eight flowers, a *Zygopetalum*, near to *Z.* rostratum, and Oncidium Papilio superbum.

Messrs. Sanders obtained a Silver Flora Medal for an exhibit in which were the scarce Bulbophyllum longisepalum, Stanhopea insignis, the pretty Cirrhopetalum umbellatum, the scarce Cattleya Leopoldii, several fine hybrids of Cattleya aurea, and albino Cypripediums.

Messrs. Flory and Black exhibited a selection of yellow flowering hybrids, of which mention may be made of Cattleya Sibyl, C. Aenæs, Lc. Vivid (Lc. Thyone × C. Roda), and Lc. Rajah var. aurea (Lc. Ettrick × C. aurea).

Messrs Stuart Low & Co., staged Cattleya Mrs. Pitt, Low's variety, with a spike of five rosy-mauve coloured flowers; C. Iris, of excellent formation; Lc. Sargon, with large flowers; and Slc. Eileen, a distinct and pleasing variety.

Richd. G. Thwiates, Esq., Streatham Hill, exhibited Cattleya Adulana (Adula × Hardyana), Lc. Firenze (Lc. rubens × C. Fabia), and Slc. Marathon var. aurora.

Mr. C. F. Waters, Balcombe, Sussex, staged Lc. Fleury (Lc. Issy × C. aurea), with bronze sepals and petals.

September 20th, 1921.

Members of the Committee present: Sir Harry J. Veitch (in the Chair), Messrs. Jas. O'Brien (hon. sec.), Richd. G. Thwaites, J. Wilson Potter, F. K. Sander, H. G. Alexander, F. J. Hanbury, S. W. Flory, J. E. Shill, C. H. Curtis, W. J. Kaye and Gurney Wilson.

FIRST-CLASS CERTIFICATE.

Brassolæliocattleya maculata aurea, from Baron Bruno Schröder (gr. Mr. J. E. Shill).—This plant carried two beautiful flowers of light chrome yellow colour and attracted much attention. All the segments are thick in texture, the wide labellum golden yellow, with slight crimson markings on the centre of the front lobe. The parentage is Lc. Thyone × Blc. The Baroness, the species included being Brassovola Digbyana, Cattleya aurea, and Lælia xanthina. In the first plant that flowered the segments were spotted with rose, hence the specific name, but the present example is entirely yellow.

AWARD OF MERIT.

Odontonia Melia (M. Bleuana × O. Groganiæ), from Messrs. Charlesworth & Co.—A pleasing hybrid, in which the erect spike carried nine medium-sized flowers of purple colour tinged with crimson, the white anther cap being a conspicuous feature.

Richd. G. Thwaites, Esq., Streatham Hill (gr. Mr. F. Gover), exhibited Cattleya Venus, a large flower, greenish, tinged with bronze, lip crimson; and C. Grenadier (aurea × Naidia), dull rose with sulphur tinge to the segments, the large and distinct lip reddish crimson.

Messrs. Stuart Low & Co. staged Cattleya illustris, with yellow sepals and petals; Sophrocattleya Doris, scarlet-red; and Slc. Rita (Slc. Marriottiana × C. Percivaliana), flesh colour with reddish veining.

Messrs. Charlesworth & Co. exhibited Lc. Pyramus (Lc. St. Gothard × C. Thurgoodiana), carrying two bold flowers of purple-pink colour; Cattleya Cybele (Antiope × Rhoda), greenish yellow with crimson lip; and Lc. Zeno (Lc. St. Gothard × C. Luegæ), of mauve-purple colour, and with a large round lip.

Mr. C. F. Waters, Balcombe, staged a pleasing Cattleya in the Hardyana section.

Messrs. R. Veitch & Son, Exeter, exhibited Cypripedium Mildred (superbiens Veitchii × lævigatum), a pretty result depicting much of the superbiens nature.

MANCHESTER ORCHID SOCIETY.

AT the meeting held on July 7th, 1921, S. Gratrix, Esq., was awarded a Large Silver Medal for a fine exhibit of hybrids; and A. Hanmer, Esq., a Silver Medal for a group of Odontoglossums.

Awards of Merit were granted to Oda. Orion, Oda. Hertha, and Cyp. Gowerianum Gratrixianum, from S. Gratrix, Esq.; Odm. Crispum Triumph, and Oda. Collinge rubra, from S. Gratrix, Esq.

Award of Appreciation, First-class, Odm. Imperator Regina, from A. Hanmer, Esq.

Cultural Certificates to Mr. J. Howes for Odm. ardentissimum, and to Mr. W. G. Giles for Odm. crispum Triumph.

At the meeting held on July 21st, 1921, S. Gratrix, Esq., was awarded a Large Silver Medal for an excellent group.

First-class Certificates were awarded to Cattleya gigas Rochellensis, with pure-white sepals and petals, the lip light rose; Brassia longisima, both from Dr. F. Bedford; Cypripedium Mrs. D. S. Brown (Gowerianum × Fairrieanum), richly coloured, from S. Gratrix, Esq.; Cypripedium Delice var. Christine, very pretty, from Dr. F. T. Paul.

Awards of Merit to Odm. Papilium West Point var., Cattleya Judah albescens, Lycaste hybrida, West Point var., from Mrs. Gratrix.

Awards of Appreciation, First-class, Odm. Aquatoris and Oda. Red Gauntlet, from S. Gratrix, Esq.; Oda. Metio (Oda. Brewii × Odm. eximium), from Mrs. Gratrix.

Cultural Certificate to Dr. F. Bedford for Brassia longissima.

SCHOMBURGKIA PSEUDOBULBS.—In the British West Indies the pseudobulbs of Schomburgkia Thomsoniana, which are about nine inches long, make useful pipe bowls. The plant is known to the natives as "Wild Banana." In another species, S. tibicinus, a native of Honduras, the pseudobulbs are between one and two feet long and quite hollow and smooth inside, and are commonly used by the native children as trumpets, whence it is called the cowhorn Orchid. At their base, too, there is always a small hole, and masses of ants and other insects take advantage of it in constructing their nests.—*Kew Bulletin*, 1911, p. 351.

ORCHIDS OF SIAM.—In a "List of the Known Plants of Siam," by F. N. Williams, published in the *Bulletin de l'Herbier Boissier*, 2nd ser., vol. iv., p. 361, reference is made to 173 Orchids, of which the genus Dendrobium heads the list with 36 species, followed by Eria, with 16. Grammatophyllum speciosum is described as being the largest of all known Orchids, and Cirrhopetalum planibulbe is a very curious little plant, found on Durian trees, and distinguished from all others by the pseudo-bulbs lying flat on the very slender stems, which thus traverse them for their whole length and are adnate to them.

ODONTOGLOSSUM EXIMIUM MEMORIA LIONEL CRAWSHAY.—The past wonderful summer has been a little too hot for some Odontoglossum houses, and any plants that have produced spikes during the latter part of the season have done so at much expense to their constitution. From de Barri Crawshay, Esq., Rosefield, Sevenoaks, we have received a flower of the above beautiful variety of O. eximium, which, had it been produced in the early spring months, would have been even finer than it is. A model flower in point of formation, all the segments are tinged with rose, and symmetrically blotched with purplish crimson. The dark crimson column and the bright yellow crest give a finishing touch. Like the majority of hybrids of O. Pescatorei, the back of the flower is tinged with violet, this characteristic being well seen in O. ardentissimum (crispum × Pescatorei). Mr. Crawshay has also flowered this summer a hybrid between O. crispum and O. Wilckeanum. The cross was made March 5th, 1893, the seed sown just a year later, and the plant flowered August 13th, 1900. All the segments are white, and it constitutes the second unspotted "crispum" bloomed in England on record.

THE ORCHID REVIEW.

VOL. XXIX] NOVEMBER, 1921. [No. 341.

NOTES.

LÆLIOCATTLEYA GENERAL MAUDE.—It is rarely one sees so intense a degree of purple coloration as in the variety of Lc. General Maude which has recently flowered for the first time in the collection of Richd. G. Thwaites, Esq., Chessington, Streatham Hill, London. This hybrid results from the crossing of Lc. rubens with C. Hardyana, and the habit of growth closely resembles L. pumila, one of the component species of the former parent. The very appropriate varietal name of Purple Glory has been selected by Mrs. Thwaites, who kindly sends the flower to us as evidence of the intense purple coloration existing in all the six segments. We may recall the fact that years ago Mrs. Thwaites pointed out how C. aurea brightens up the purple colour of certain species when fused with it through hybridisation, and the present instance is but another example, the yellow of C. aurea being obtained from the C. Hardyana parent.

SERAPIAS GREGARIA.—Under this name a new European Serapias is described in the *Journal of Botany*, 1921, p. 241, by Col. M. J. Godfery, F.L.S. Its habitat is the Schistose hills, Hyères, France, and the flowering season April-May. As some of the characters were those of S. parviflora, Col. Godfery at first thought the plants must be hybrids between it and S. lingua, but "later on the same plant sprang up in thousands, nearly always in colonies. It was no longer possible to regard it as a hybrid, not only on account of its great abundance and uniformity, but also because not a single specimen of either lingua or parviflora could be found in the locality." The hybrid was compared with the true lingua, and the points of difference are recorded, these being chiefly in regard to the lip. "I was therefore forced," states Col. Godfery, "to the unexpected conclusion that there exists in France a hitherto unrecorded species of Serapias, and decided to name it Serapias gregaria, from its habit of growing in colonies. This is due to the annual production of a third tuber, so that the plant is succeeded, accidents apart, by two new plants instead of by one only, as in the majority of Orchids, resulting in a rapid vegetative increase." S. gregaria flourishes upon the schist, while S. lingua and S. parviflora on

moist sandy ground near the sea, and on this account Col. Godfery states "it is difficult to believe that lingua and parviflora could have given rise to a hybrid which finds its home on an entirely different geological formation." An excellent plate of the new species, as well as that of S. lingua for comparison, accompanies the article.

ONCIDIUM BICALLOSUM.—At the Meeting of the Manchester Orchid Society on Sept. 8th, Messrs. A. J. Keeling & Sons were awarded a Cultural Certificate for a fine plant of the interesting Oncidium bicallosum. It is figured in the *Botanical Register*, 1843, t. 12, with a note that among the numerous fine things found in Guatemala by Mr. Skinner, there are not many which are more deserving of cultivation than this plant, which has so much the habit of O. Cavendishianum as to seem a mere variety of it, although in reality quite a distinct species. The flowers are fully two inches in diameter, which is four times the size of O. Cavendishianum; they appear in a dwarf erect raceme, not panicle; they are of a rich yellow, with the sepals and petals bordered with cinnamon colour; the labellum has two very small lateral lobes, and for its crest it has a pair of distinct tubercles. The specific name is derived from the two warts on the crest of the lip.

EARLY ORCHID BOOKS.

RECENTLY I came across two well written books, which must surely represent the first attempts to make better known a subject with which the world could have been but slightly acquainted at the dates of issue. Some fugitive papers and some elaborate plates had, I believe, previously appeared in various periodicals or portfolios, but nothing like plain instructions for the management of this remarkable family of plants had been distributed, so that the authors deserve much credit.

One is called a "Practical Treatise on the Cultivation of Orchidaceous Plants," with remarks on their geographical distribution and a select catalogue of the best kinds in cultivation. By John Henshall, London, Groombridge & Co., 1845. It is dedicated to J. H. Schröder, Esq.

The other booklet is dated 1852 and represents the first edition of the *Orchid Grower's Manual* by Benjamin Samuel Williams, then a gardener to Charles B. Warner, Esq., Hoddesdon, Herts. The contents are stated to have appeared in the *Gardeners' Chronical* under the title "Orchids for the Million." The author became a famous nurseryman at Upper Holloway, and I remember going over his place many years ago. He had a reputation for stove and greenhouse plants. This brochure grew into a great work, of which I possess a copy of the sixth edition, published in 1885. A seventh and last edition appeared in 1894.

DONALD MCDONALD.

NATURAL HYBRID ORCHIDS FROM ARRAN.

By REV. T. STEPHENSON, D.D., and MR. T. A. STEPHENSON, M.Sc.

TWO photographs are here reproduced of hybrids found this summer in Arran. (1). Gymnadenia conopsea × Orchis maculata, s.s. ericetorum. The photograph shows a reduced figure of the flower-head. The whole plant was about 2.5 dm. high, with long narrow, rather fleshy, unspotted leaves. The flowers were pale lilac, of one tint all over, spur long, lip rounded, with centre-lobe rounded and slightly prominent. Each lip had about half-a-dozen tiny spots, in two lines, which have not come out in the photograph. The flower was slightly scented. It is the most beautiful plant of this type we had ever seen, and the largest. In a note in the *Orchid Review*, 1919, p. 170, the late Mr. R. A. Rolfe noted some records of this type, under the name Orchigymnadenia Heinzeliana, Camus. This evidently includes hybrids of Gymnadenia conopsea with aggregate maculata; but seeing that individuals of these plants are fairly numerous it is desirable to distinguish hybrids of O. ericetorum from those of O. Fuchsii, Druce. As it happens both forms were growing in the swampy field, where the specimen described was found, and the points that lead us to refer it to O ericetorum are the very small area of the centre lobe, and the minute spots on the lips. In all undoubted hybrids of O. Fuchsii, of which we have seen a good many, the centre-lobe is far more prominent, and

1. GYMNADENIA CONOPSEA × ORCHIS ERICETORUM.

(Photo by E. W. Tattersall, Brodick, Arran, N.B.)

occupies a larger proportionate area of the lip, which would also probably be streaked, rather than spotted.

(2). Gymnadenia conopsea × Orchis purpurella, Stephenson. This hybrid has not been hitherto described. Of the first type, three plants were found growing together, the tallest about 2 dm. high. The whole plant was yellowish-green, with narrow, unspotted leaves. The flowers were larger than those of Gymnadenia conopsea, but the general habit and the purple tint were very suggestive of a rather coarse specimen of that plant. The lip was distinctly trilobed, with a small, regular centre lobe, and a regular pattern of broken lines, the spur very long and stout, and the flowers strongly scented.

2. GYMNADENIA CONOPSEA × ORCHIS PURPURELLA.

(Photo. reduced, by E W. Tattersall. Brodick Arran N.B.)

Besides Gymnadenia conopsea, the other plants on the ground which might be involved were Orchis latifolia, in quite small quantity, and plenty of O. purpurella, as well as O. praetermissa v. pulchella, Druce. What rules out O. latifolia is the very stout spur, which is also of a strong purple tint, darker a little than the rest of the flower, which is not usual. The spur of O. latifolia is paler and more slender. O. purpurella, Stephenson, and O. pulchella, Druce, are very closely related, and as both were present, one could not possibly decide which was the parent in a case where the hybrid had unspotted leaves. It may be said that O. purpurella is normally dwarf, with leaves very finely spotted, and O. pulchella normally stouter and taller, and always with leaves unspotted; but the flowers are very much alike.

A second type of the same hybrid was also found, a form of great interest, verging much more towards O. purpurella, as the first type verged towards the other parent. This was a slender dwarf plant, about 1 dm. high, with spotted leaves narrower than O. purpurella, very similar as regards the general appearance of the lip, but with a very long and stout spur, and scented.

Other types of hybrids were also found, including, in quite large numbers, what we should regard as Orchis purpurella × O. latifolia, O. purpurella × O. Fuchsii, and O. purpurella × O. ericetorum.

We are much indebted to Mr. Edward Tattersall for permission to reproduce the photographs.

ORCHIDS OF NEW CALEDONIA AND THE ISLE OF PINES.

A SYSTEMATIC account of the plants collected by Prof. R. H. Compton in New Caledonia and the Isle of Pines during 1914, is published in the last issue of the Linnean Society's Journal (vol. xlv, p. 245). The specimens have been presented to the British Museum, where the greater part have been determined. The flora of New Caledonia is of exceptional interest, especially in regard to the large number of peculiar endemic forms.

Of the 59 species enumerated the following are new: Dendrobium Comptonii, with yellow stems, almost covered with the whitish, thinly membranous remains of the leaf-sheaths; Bulbophyllum lingulatum; B. Comptonii; Phreatia Comptonii, found as an epiphyte on the fallen log in moist forest; Phajus neocaledonicus, ovary and pedicel white, lip creamy yellow with faint rosy patches outside mouth; Calanthe oreadum, near the endemic species C. Balansae, but differs in floral details, especially the lip C. neocaledonica, flowers white, tinged with yellow when old, with a waxy appearance, near the last species, but differs in floral details and especially in the longer curving-lip; Sarcochilus neocaledonicus, flowers orange-yellow, lip with two fine upwardly directed points; Acianthus nanus, rather rare in moist forest, flowers greenish white tinged with purple; A. culiciferus, found among dead leaves, twigs, and humus in forest near river; A. bracteatus, flowers dull, dark red; A. corniculatus, plant with much anthocyan throughout, flowers smaller than in the last species, and the sub-tending bract inconspicuous. The two last mentioned species are characterized by an appendage about the middle of the anterior face of the column, a character which has not, to Dr. Rendle's knowledge, been hitherto noted in the genus. Analytical drawings of nine of the above new species are given in plate 13.

ORCHIDS OF MOUNT KINABALU AND THE HIGHLANDS OF BRITISH NORTH BORNEO.

MOUNT Kinabalu, the highest mountain of the Malay Archipelago, was first ascended by a botanist, Sir Hugh Low, in March 1851. He made a second ascent in June, 1858, accompanied by Spencer St. John, and was followed by Burbidge in 1877 and 1878, Whitehead in 1888, and finally Haviland in 1892. Botanical work has also been done in the past on the coastal flora of the country. Miss Lilian S. Gibbs, F.L.S., landed at Jesselton, the capital, at the end of December, 1909, and a full account of her work in British North Borneo and especially on Kinabalu itself, is published in the Linnean Society's *Journal*, vol. xlii, No. 285.

In the chapter devoted to the itinerary and descriptive account of the vegetation, the first mention is made of the Orchids: "On the sandy beach, and on a trunk, dislodged and lying on the latter, a beautiful Dendrobium crumenatum (pigeon orchid) was in full flower, a rather interesting fact, as Capt. Learmonth informs me that the vertical rise and fall of tide in North Borneo ranges between 6 and 10 feet." At the Residency of Tenom, which is 700 feet above sea-level, there are many plants of interest, and it is stated: "Of epiphytes, magnificent examples of Platycerium biforme showed the long fronds hanging down from the topmost branches, whilst Asplenium nidus nestled in the lower forks. The large white flowers of Phalænopsis amabilis made constant splashes of light amongst the surrounding foliage, often poised on dead sticks which formed the whole support of fine flowering specimens." And, at a higher altitude, "the white Calanthe Gibbsiæ and the purple Miscobulbum scapigerum, with lovely shaded leaves, were of isolated habit."

At chapter 4 begins the ascent of the mountain, and we read that all the second supply of stores had been brought up to Kiau. "The Dusuns of Kiau all speak the Dusun language, but one Lamat, the potential headman of the place, who had three ascents to his credit, could speak good Malay, having been to Singapore with Waterstradt, an experienced Orchid collector, who was the last person known to have ascended the mountain. Lamat was to be our guide in chief, and proved, of course, invaluable in the endless preliminary discussions and arrangements. My first care at Kiau was to establish a Javanese boy in the cookhouse, where a good fire had to be kept going night and day for the purpose of drying the material collected." The plants were intended for preservation as herbarium specimens, and not for cultivation. "This boy was very kindly procured for me by the authorities at Buitenzorg, and had been out with many well-known botanists in Java, and his time at Kiau was wholly spent

in solemnly turning over papers and specimens before an admiring Dusan audience."

On the bridle-path towards Koung, "Groups of gregarious palms clothed the sloping sides of streams, while tree ferns, markedly absent elsewhere, were another prominent feature." The terrestrial Orchids Spathoglottis aurea, Ascotainia borneensis, and Coelogyne Sanderiana, formed part of the undergrowth, which in many places consisted of bracken about 3 m. high that had to be beaten apart to allow of passing through. Of epiphytic Orchids the magnificent yellow Eria Gibbsiæ, forming big clumps on old tree-stumps, and Vanda Gibbsiæ, with shoots about 1 m. long and large yellow flowers, were very common.

On the Gurulau Spur Goodyera kinabaluensis, with its lovely pink-veined leaves, and Eria cymbidifolia, an acaulescent, pink-flowered species, were found. "Moss had covered the trunks of the trees up to now, but here it also over-ran the prostrate logs which encumbered the ground and growing upon which various Orchids were conspicuous." Higher up, on the trunks of trees, were Trichoglottis kinabaluensis, Eria rubiginosa, Dendrobium villosulum, and Liparis disticha. Other Orchids were found on the Maraiparai Spur.

In the chapter devoted to the "Ascent to the Summit," we read of the many preparations that were necessary for a party of 35 during a five or six days' trip. Sumat, one of the three head-men, "carried an enormous basket of charms, something like a pillow-lace cushion in shape, the charms hanging all round like bobbins, each encased in coloured rotan, beautifully plaited. The separate items consisted of bits of horn, bone, pebbles, glass, and other oddments, and I recognised the basket as being the same which Low described as being carried by his guide Lemaing on the occasion of his first ascent.

As the ascent continues, the reading increases in interest. At an altitude of 7,000 ft. the little oasis of Kamburangau was reached. It was here that Whitehead, "under almost impossible hardships, spent six weeks in practically ceaseless rain and mist, and although ill with fever and limited to a miserable *zulpa* as shelter for himself and his faithful Kadyans, obtained and skinned a great part of his priceless collection of birds." But Miss Gibbs experienced some difficulty about water for so many people. What had soaked into holes made in sand had given out, so recourse was made to that stored in the pitcher-plants for making tea. Trouble was also experienced with the natives, the low temperature having a most demoralising affect, for clad in cotton garments they had no protection, and the feeling of cold was to them a disease to which they would willingly have succumbed if no European had been present to keep them going. Amongst the very luxuriant epiphytic growth Eria ferox, 0.75 metre in height, was in

flower. Farther on, the yellow Platanthera Gibbsiae, Sigmatochilus kinabaluensis, Coelogyne papillosa and C. exalata were discovered.

For the last stage of the ascent the party consisted of seventeen, only those who volunteered being taken. Sheltered low forest was passed through, and an Eria growing in large colonies was found. At the summit, the party stepped out of the dwarf forest on to the granite core. In the cracks of the granite, a little light yellow Orchid that proved to be Dendrochilum stachyodes, was found, the altitude being 12,000 feet.

No less than 48 species of Orchids were collected by Miss Gibbs, of which twenty proved to be new, including one new genus. In working them up two others collected on Mt. Kinabalu by Haviland were found, and as these had been named by Dr. Kranzlin, but not described, they are included in the present paper, which thus deals with fifty species, of which 22 are described for the first time. Of these, no less than 42 were found on Mt. Kinabalu, and no fewer than 23 are not yet known from elsewhere, and five others are only known from Borneo. The most interesting is without doubt Sigmatochilus kinabaluensis, for which Mr. R. A. Rolfe constituted a new genus. It is a very curious plant of the Coelogyne group, the lip being free from the column, and strongly sigmatoid in shape, the latter character being commemorated in the generic name. It is well figured in plate 3. Terrestrial in habit, and with white flowers.

ODONTIODA SANDERORTHII.—The specific name of this novelty is derived from that of its parents, Oda. Sanderæ and Oda. Charlesworthii. It is of reddish scarlet colour throughout, excepting the golden crest on the labellum and the under part of the column. Raised in the collection of Richard G. Thwaites, Esq., Streatham Hill.

DENDROBIUM APHRODITE AND D. NODATUM.—Rarely has the same species been differently named within the space of a few hours. Reichenbach's name Aphrodite with description appeared August 1st, 1862, and Lindley's name nodatum was published 24 hours later, and for that reason becomes a synonym of the former. This plant was one of the numerous discoveries of the Rev. C. Parish, in the Moulmein district of British Burmah, and was introduced by Messrs. Low & Co. in 1862. It is a late-summer flowering species and now extremely scarce in cultivation, hence the fine plant cultivated by Messrs. Armstrong & Brown possesses more than an ordinary Dendrobium interest. The sepals and petals are cream coloured; the lip saffron-yellow, and with two small maroon-purple blotches at the base; the anther cap purple: and the spur short and obtuse.

ANCISTROCHILUS THOMSONIANUS.

THIS species is a native of West Tropical Africa, where it was discovered by Mr. W. Kalbreyer when collecting for Messrs. James Veitch and Sons, Chelsea, and was described by Reichenbach in 1879, under the name Pachystoma Thomsoniana (*Gard. Chron.*, 1879, ii. p. 582), being dedicated at Kalbreyer's request to " the late Rev. George Thompson, who was unusually kind-hearted in his English reception of the German traveller." Reichenbach described it as perhaps the most curious discovery made in

ANCISTROCHILUS THOMSONIANUS.

Tropical Africa by Kalbreyer, regarded from a geographical point of view as all the Pachystomas known were of Asiatic origin, and he remarked:— " The large green, white and purple flowers, with a certain Phalaenopsis shape, recommend the plant." It was figured in the *Botanical Magazine* (t. 6471), when Sir Joseph Hooker expressed his doubts whether it really belonged to Pachystoma, though he was unable to find a better place for it among described genera. However, Sir Joseph stated that "its graceful form and the purity and brilliancy of its white, and the vividness of its purple, render it one of the most beautiful Orchids of its type and habit, which remind one of some Cœlogynes."

Reichenbach afterwards made a new section of the genus for its reception, calling it "Thomsonianum" (*Xen. Orch.*, iii. p. 35, t. 213). Pfitzer transferred the plant, with some doubt, to Ipsea (*Engl. and Prantl., Pflanzenf.*, ii. pt. 6, p. 154), and Rolfe established a new genus for it under the name Ancistrochilus (*Fl. Trop. Afr.*, vii., p. 44), in allusion to the hook-like front lobe of the lip. The accompanying illustration shows a specimen that flowered at Kew, with six racemes, two of which had three flowers each. The sepals and petals are pale lilac-pink, the side lobes of the lip green, dotted with dusky brown, and the front lobe and disc bright purple. The column is light green densely dotted with dusky brown. It is allied to Pachystoma, but is readily distinguished by the pollinia being attached to a single stipitated appendage, and by its remarkable lip. The supposed "gland" figured in the *Botanical Magazine* is only a viscid secretion, and not analogous to the gland of the tribe Vandeæ.

This plant is a native of Old Calabar, where it is found, at a moderate elevation, growing on the trunks of trees. Inhabiting one of the hottest parts of the globe, its chief cultural requirements are continual warmth and moisture, such as are maintained for Phalænopsis. This species is not often met with under cultivation, hence the specimen recently seen in perfection in the collection of Dr. Fred. Bedford, of Fulford, York, provides a pleasing reminder of an interesting as well as an attractive Orchid.

AGROSTOPHYLLUM SPECIES.—Amongst the Orchids collected by Miss Lilian Gibbs on Mount Kinabalu were two specimens of Agrostophyllum, both without flowers, and therefore indeterminable. In the account of this collection published in the Linnean Society's *Journal, vol. xlii, p.* 154 it is remarked: "This is the common condition of herbarium specimens of Agrostophyllum, apparently because these very fleshy plants take so long to dry that the capsules develop after gathering. The plants should be killed by scalding if possible, and a few flowers detached and dried separately in a foiled piece of blotting paper."

EASILY-GROWN Orchids.—An excellent article by Mr. Donald McDonald on easily-grown Orchids appeared in the *Daily Telegraph* of Oct. 6th. "At one time" he states, "only those possessing properly constructed glass-houses could successfully cultivate Orchids. But now the experts have introduced a number of hybrids which are amenable to reasonable treatment in ordinary houses; indeed, the new cross-bred Odontiodas and Odonto-glossums are gradually developing into a type almost as easy to grow as geraniums and fuchsias, so that everyone who loves beautiful flowers will soon have the chance of seeing masses of these richly-coloured and quaintly formed treasures decorating their little Crystal Palaces and windows around."

PHAIUS CLIVE.

SEVERAL beautiful Phaius hybrids were raised in the collection of the late Mr. N. C. Cookson, and of these the one illustrated has many points of interest. Phaius Clive is the result of crossing P. Norman with P. simulans, the former parent being a hybrid between P. Wallichii Sanderianus and P. simulans. It thus contains theorotically three-fourths

PHAIUS × CLIVE.

of P. simulans. When exhibited at the Royal Horticultural Society on Feb. 24th, 1903, it received an Award of Merit, and on March 31st, 1908, a First-class Certificate. The sepals and petals rosy-lilac; the lip broad, mottled with claret on the basal half, the front rose-coloured with purple markings, the crest yellow and red, and with the distinct tuft of hair-like bristles in the throat, derived from P. simulans. Phaius hybrids should be re-potted in the spring when commencing their new growth in a compost of fibrous loam, sphagnum moss, and some osmunda or other fibre to keep the mixture porous. During the growing season the plants delight in ample moisture, with occasional waterings of weak manure, but during their

season of rest but little is required. The temperature should be high in summer, 70 degrees being a good average, and the foliage must be shaded, for direct sunshine burns the leaves. During the winter period the plants will not require more than about 55 degrees, provided there is not much moisture in the atmosphere.

SPIRANTHES AUTUMNALIS.—This pretty little British Orchid produces an erect spike of 6 to 8ins, around which the white and fragrant flowers are arranged in spiral form, hence the name. It is fairly common in Kent. In 1843 a field in the neighbourhood of Tunbridge Wells produced such an abundant supply that it could be gathered at almost every step, yet strange to say, in August of the following year, not a stem or leaf indicated that it had grown there (Webster, *British Orchids*). When paying a visit to the locality during the past month, the writer noticed several vigorous plants that had been potted up by Messrs. Armstrong and Brown and placed in the warm section of the Cypripedium house, where they appeared to be thoroughly enjoying the excessive heat and moisture.

POLLINATION OF HÆMARIA DISCOLOR.—A curious means of effecting pollination in Hæmaria discolor is recorded by Mr. H. N. Ridley (*Journ. Linn. Soc.* xxxii. p. 401). He states: "I have seen the flowers fertilised by a butterfly, viz., Plesioneura asmara. This insect, which has very long legs, settled on the spreading sepals and lip, and plunged its proboscis into the opening of the spur between the lip and column, which are closely appressed together. While thus engaged, one of its left legs struck against the viscid disc of the pollinia, which it withdrew, and which remained adhering to it. The column in this plant is so twisted to one side, that an insect seeking honey in the spur, could not, unless very large, touch the pollina with its head. The stigma is a projecting cushion placed a little below the anther-cap. The butterfly, after sucking the nectar for some seconds, darted suddenly to another flower, and struck with its leg the stigma implanting the pollinia on it; but as it immediately flew off again a portion only of the pollen adhered to the stigma. I caught another specimen at the flowers which bore the pollen masses firmly attached to the right fore-foot. Hæmaria seems to be specially adapted for butterfly fertilisation in several points. Unlike many Neottieæ, it inhabits sunny rocks near streams where butterflies are abundant. The flowers are showy and white, the colour of most of the butterfly-haunted flowers in the jungle; and the remarkable twist in the column and lip seem to be intended to ensure the visiting insect in striking the viscid disc and stigma with its legs." Hæmaria discolor is found on the islands lying off the east coast of Johore. The natives, who deal in it, call it "Daun Low," *i.e.*, Sir Hugh Low's leaf.

ORCHID CULTIVATION ON BLOCKS OF WOOD.

THE photograph reproduced on this page, clearly shows that Orchids can be cultivated on blocks of wood, but only successfully when nutritive material surrounds the roots. The article on this subject in our last issue (p. 113) dealt more especially with securing the plants to dead logs of wood, with but little or no compost around them. In the present example, which was cultivated by Mr. Geo. Taylor, when Orchid grower to Sir John Ramsden, Bart., at Byram Hall, Ferrybridge, East Yorks, the plant has responded to an ample supply of food material. Originally, it consisted of three or four small bulbs, but after some ten years it produced in one season no less than 33 flowers. Mr. Taylor selected a block of Elder wood, because the bark of this peels off very cleanly, thus allowing the roots to be removed with but little damage when transferring the plant to a new block. Osmunda and peat, with sphagnum moss, were secured around the base of the plant by means of copper wire, and this compost was replenished annually, or as occasion required. This interesting plant of Cattleya labiata was suspended in a moist airy house, and during the growing season was frequently syringed overhead.

CATTLEYA LABIATA GROWING ON A BLOCK OF WOOD.

THE AMATEUR'S PAGE.

THE Editor has been asked by various amateurs for assistance on the following subjects, and he will gladly welcome additional information:

Crocking Pots.—"In my early days of Orchid cultivation I always used plenty of crocks, and I felt sure that this principle was correct, for it was then recommended by almost all the best guide books to fill the pots at least half full of crocks. But when I now turn out a plant for the purpose of repotting, I find that the nurseryman from whom it has recently been purchased seldom uses more than one large crock for the bottom of the pot, and a sprinkling of smaller pieces over it. Will you please inform me the reason of this change, and which method you advise me to follow?"

It was certainly the custom in days gone by to half fill the pots with crocks, for with some cultivators there still lingered ideas that Orchids lived mainly on the air, and on that account should have ample ventilation beneath them and also around their roots. But it should be noted that in former days much more water was applied than was really necessary, and if this surplus did not pass easily and quickly away the compost soon became chocked with moisture and prevented the proper activities of the root system, resulting in an early death of the plant. The early day cultivator subsequently learnt by experience that too much water was injurious, but instead of lessening the quantity he overcame the trouble by providing plenty of crocks to enable the excess of water to pass rapidly away. As time went on it was realised that much of the space taken up by the numerous crocks could be used by nutritive compost to the advantgae of the plant, and a gradual lessening of the drainage material occurred. Although success was not at first achieved by all who followed the newer method, in was soon ascertained that the secret lay in the use of the watering pot, for as the drainage material decreased in quantity and efficiency so a smaller amount of water was needed. Although moisture is a necessity, it has been truly said that the over-use of the watering pot has been the principal cause of many a plant's early death. The trade-grower, who is always on the look out for means to economise, finds that with fewer crocks he can place sufficient compost for the plant's requirements in a smaller pot than formerly, and with a corresponding saving in the matter of stage-space as well as in the cost of pots. Amateurs would be well advised to follow the nurseryman's plan, and to take special care in regard to the watering. As a guide to the size of the pot required, just room for the new growth to be formed and for its roots to freely enter the compost is a safe one.

Cypripediums Rotting.—"Some of my Cypripediums are rotting off, and the damage appears to commence near the roots, at least, I think so, for the

leaves remain green, but are easily detached from the plant, when their lower ends are found to be decayed. What can I do?"

Cypripediums are moisture-loving plants, it is true, but there are some kinds which are very susceptible to any water remaining in their growths, C. villosum is a species that soon loses its leaves on this account, and in the several cases that have been brought to the editor's notice of Cypripedium hybrids rotting off, all have been plants containing villosum in their parentage. Hence it is advisable, wherever possible, to place this section by themselves for special treatment. No harm occurs during the warm weather, but when a cold night follows a day in which much water has been used, and the air in consequence is saturated at night-time, then the trouble appears. A good plan is to look over the plants in the evening, and any that have water lodging in their growths should be held upside-down for a moment and the growths lightly pressed by the hand, when any surplus water will quickly be removed. This treatment is only necessary when a sudden change from a warm day to a cold night is expected. It may be asked what happens to C. villosum in its native home? But this is rather outside the question, for the atmospheric conditions are probably of a very different nature to the interior of a glass-house, in which it is impossible for any currents of air in the form of wind to carry off the excess of moisture. As the winter approaches and the likelihood of plants rotting increases, so greater care must be exercised in giving water, not so much perhaps in the actual quantity, but more especially in applying it to the compost only, always avoiding the new growths.

Cypripedium not flowering.—"With the arrival of each autumn my Cypripediums give a supply of flowers that for an amateur's collection leaves nothing to be desired. There is, however, an exception in Cyp. Mrs. E. V. Low, which is with me a very shy plant as regards flowering, and I wish to know if this is generally the case?"

The above Cypripedium is a hybrid between insigne and niveum, and must be regarded as a variety of the earlier C. Venus (insigne × niveum). Another name for this cross is Cyp. Muriel Hollington, and although some doubt was at one time expressed as to the parentage, it is now believed to have been the first hybrid between these two species. Cyp. Boltonii may also be mentioned, for it probably arose from crossing insigne Sanderæ and niveum. The particular shyness in the flowering of Cyp. E. V. Low is characteristic of the plant, but whether this can be overcome by any special treatment must be left to the kindness of our readers for any information they may be able to contribute. A suggestion has been made that keeping the plants rather dry in the autumn may assist the production of flowers, much in the way that Dendrobiums are treated. But even if this method

results in success, it can hardly be beneficial to the health of the plant, for Cypripediums are moisture-loving plants, and are not provided with any special organs in the way of bulbs for storing water during a dry period.

DENDROBIUM PHALÆNOPSIS.

WHEN Fitzgerald described this beautiful species in 1880, he said it is easily distinguished from D. bigibbum by the absence of the recurving of the segments, and that there are no white glands on the disc of the labellum. From D. superbiens it is distinguished by the broadness of the parts of the perianth, and by the sepals not being undulate, as well as by the absence of ridges or plates on the labellum. The finest of the Australian Dendrobes, Fitzgerald called it Phalænopsis, from the likeness of the flowers to moths, and also to those of the genus Phalænopsis. The specimen described flowered in the collection of Captain Broomfield, of Balmain, Australia, and was collected near Cooktown, in Northern Queensland.

About the year 1891, this species became well-known in Europe, for Messrs. Sanders obtained a splendid importation of the variety known as D. Phalænopsis Schröderianum, which comes from the locality of New Guinea. Its habit is larger, and the flowers are more richly coloured, yet variable. Varieties have been flowered with white sepals and petals, and the lip tinged with pink, as well as one having the lip striped, and others pure-white in all the segments.

Our illustration shows a group of this beautiful Dendrobium flowering profusely in the collection of the late O. O. Wrigley, Esq., at Bridge Hall, Bury. The plants had been cultivated there for about twelve years, and yielded numerous drooping spikes of bloom each autumn. A remarkable exhibit of this species, and one which will long be remembered, was that staged at the Royal Horticultural Society on November 7th, 1911, by G. F. Moore, Esq., of Burton-on-the-Water. It comprised about 80 splendidly grown plants, most of which had been in the collection for eighteen years. A Silver Lindley Medal was awarded.

CIRRHOPETALUM MINIATUM.—At the R.H.S. Meeting, Sept. 27th, a pretty little Cirrhopetalum with vermilion-coloured flowers was exhibited by Sir Jeremiah Colman, Bart. It was originally introduced from Annam along with Dendrobium Bronckartii by Messrs. Sanders, and subsequently M. Valcke, a collector for Mr. T. Pauwels, Meirelbeke, Belgium, stated that he had also seen the species growing at Haut Laos, between Siam and Cochin China.

A GROUP OF DENDROBIUM PHALÆNOPSIS.

CONFUSING THE AMATEUR ORCHID GROWER.

By J. M. BLACK.

THERE is much need in the *Orchid Review* for an Amateurs' page of the most elementary kind. There are several books on the culture of Orchids that are helpful to the beginner, but some of these may be said to have the defect of their own excellence in explaining too much. I had before me lately a table drawn up by an amateur for the guidance of his gardener. Plants like Odontoglossum Pescatorei and O. crispum were under headings for different treatment, with set temperatures for sections of the year, the number of times to water "a day" (!) or "week," the number of times to syringe, the beginning and end of a definitive resting period, the month to pot, and other details all carefully tabulated. This amateur is a beginner, and his gardener is confessedly without experience, but with this table his task is to be made easy! The collection is a very small one of a dozen or two plants all told, but on the table no two are to have exactly the same treatment. Number one is to be syringed twice while, say, number four must be syringed three times, and perhaps this operation in the meantime has to be withheld from number seven. And so on with the watering. One plant has to be watered once a day, another twice a week and so on. Now this absurdity is no joke, and the duty was allotted to me to fill in data under some headings that this amateur had left blank, not having been able to find the necessary particulars in his readings. I am not trying to make fun of this document. It was a reasonable and praiseworthy effort of an inexperienced Orchid beginner to get hold of something to work on, and he went to the text-books on culture for his gleanings, or so I have concluded. When I received this table all my sympathy went out to the gardener. Imagine his watering Oncidium excavatum twice daily "according to plan," and against his better judgment. There were seemingly to be no excuses from these daily drenchings, such as dull, rainy or cold weather might have provided, until the end of September, and then modification set in.

I will say no more about the above document, and I am quite sure the gentlemen who compiled it will think no worse of me for having said so much—and I hope he will read this—but it has set me thinking of the need of a purely amateurs' page in this publication. Those of us who have been growing Orchids for many years hardly realise the puzzlement that beginners experience and how much they rely on written instructions, and how much these instructions may bewilder. Much needless mystery has grown up round the culture of Orchids, and while the "professional" has become used to and understands his own jargon, it may be very different with the man who first ventures into the study of the requirements of these plants. Much detail should be swept away in instructing the beginner. The Orchid

should be looked upon as an ordinary plant and treated as an ordinary plant growing in a pot in a greenhouse, to be watered when dry and *never* watered when wet. Phrases such as "putting plants in their resting quarters," and "more water will be now required," are confusing to the beginner. What resting quarters can a man put his plants in who has only one house, and what resting quarters are wanted anyway? More water will be required at any season when the plant is dry, and it is pretty obvious that water will have to be applied more frequently when the days are long and warm than when they are short and cold. So far then we have no mystery. "Sufficient water only should be given to keep the plants from shrivelling" is excellent advice for the beginner, who nearly always makes the mistake of over-watering. This is excellent advice in the summer and excellent advice in the winter. The "growing" and "resting" periods are outside the control of the cultivator, so why worry about them? With some exceptions the Orchid is an ever-green, and literally speaking there is no resting period or drying period for these. *All* Orchids follow the natural law of responding to the seasons, and the cultivator can do little in forcing or retarding them, nor should it be attempted too much if the health of the plant is valued.

The wonder plants of the world are the Epiphytes, the tropical tree-dwellers, and in becoming tree dwellers they adapted themselves to their chosen abode by providing themselves with means of resistance to the changes and rigours they have to endure, and now expect to come. Keeping them constantly wet is what they or their ancesters were not brought up to, and to keep them "tuned up" they must be allowed to dry out at the roots at frequent intervals, and at all seasons. I am writing purposely broadly and include all evergreen pseudo-bulbous Orchids, for I cannot quickly remember an exception. And this treatment should be carried on spring and summer, autumn and winter. What treatment? Water when dry or dryish. Immediately we begin to examine these tree dwellers we come to two of the most important sections of all the Orchids, namely Cattleyas and Odontoglossums; and these, because of their great beauty and amenable characters, were early seized upon by Orchid hybridisers for their work, and have become the progenitors of the two most important hybrid groups. Less worthy in themselves, but with one or more desirable characteristics, allied genera have been linked on to these two, and though we still speak of the "Cattleya" house and the "Odontoglossum" house, the contents of these houses mean much more than the names convey. We have here two sections that contain endless kinds of Orchids, but this does not mean endless kinds of treatment: all the Cattleyas, all the Lælias, and all their relations by marriage require identical treatment, and particularly enjoy the "tuning up" process already mentioned by being allowed to become dry or dryish at the roots before being given water. In the

Odontoglossum house, the best known probably are O. crispum and O. Pescatorei, but these have now been bred into other genera, until there are hybrids of all the shades of colour and of great diversity in size and form, but the treatment given the old species is still the treatment of the Odontoglossum house with its numerous and varied occupants. Cattleyas and Odontoglossums are not usually grown in the same house, because the former usually enjoys ten degrees more warmth; and there is another peculiarity about the Odontoglossum taken in bulk, and that is that it begins to grow when the Cattleya leaves off in the autumn, and the "tuning up" need not be so carefully followed up, but it must not be forgotten, as it is a potent health giver.

I am convinced from my own observation that the prevalent mistake made by the beginner is overwatering, and this is a mistake that any young gardener is prone to make. Orchid roots are very easily killed if too long wet, and this is a calamity that one must avoid. Over-potting is another pitfall waiting for the beginner. These and the many other matters connected with Orchid growing should be dealt with month by month in the *Orchid Review*, and in the simplest possible way. An Orchid detests being coddled and made a fuss of, and while there are certain kinds difficult to keep up to concert pitch, the great majority, and these include the most beautiful and the most useful, are as easily managed as many ordinary greenhouse plants. I would ask all in doubt to write to the genial Editor of this paper, who, I am sure, will do his very best to help all he can in cultural and other matters. In this way other beginners will benefit and early discouragement be side-tracked. There is a reluctance among small beginners about visiting trade collections for fear of being importuned to buy expensive plants, but there is little foundation for this fear. I know no one in the trade who will not welcome a visit from anyone interested in Orchids, and a visit to an Orchid establishment, be it private or trade, is the best and most directed kind of instruction. No collection can boast of every plant being in perfect health, but there is a great pleasure in coaxing plants back to that condition, and I know several amateurs who take exceptional pride in this.

MILTONIA SPECTABILIS.—This species was originally sent from Brazil in 1835 to the Birmingham Botanical and Horticultural Society, by a Mr. Fry, but is said to have first flowered in this country in the celebrated nursery of Messrs. Loddiges, at Hackney, in 1837, and shortly afterwards with Mr. George Barker at Birmingham. The genus Miltonia was established for its reception by Lindley, and a month later Messrs. Knowles and Wescott described it under the name Macrochilus Fryanus, which now ranks as a synonym.

CULTURAL NOTES.

By H. G. ALEXANDER, Orchid Grower to LT.-COL. SIR GEORGE HOLFORD, K.C.V.O., WESTONBIRT.

AUTUMN FLOWERING CATTLEYAS AND LÆLIOCATTLEYAS.—Throughout the autumn we have members of the beautiful species and hybrids of the former genus and the bigeneric Lælio-Cattleyas and Brasso-Cattleyas, forming the chief attraction of the Orchid houses. These are, unquestionably, the most showy and desirable Orchids for this season, and a good stock of plants, with their wide range of colouring, is of the greatest value in maintaining a display of flowers. The spikes when cut are charming for all kinds of decorative purposes, and seen under artificial light there is nothing to surpass the georgeous colours of the showiest varieties. Many of these are now in their full beauty, and the quality of the flowers bears remarkable evidence of the great benefit the plants have derived from the extraordinary amount of sunlight and heat during this record year. The blooms of some of the Catteya family possess exceptional lasting qualities, and Orchid growers know that to leave them on the plants until they completely fade means ruin to many specimens. The ill-effect of allowing flowers to remain on for a longer time than is good for the plants is not always apparent immediately, but it will almost certainly be seen the following season in the unsatisfactory growth of the plants and the inferior flower-spikes. The Cattleya family produces flowers more freely than many other kinds of Orchids, and even plants with quite weakly growth will often send up flower-spikes. The removal of the flower-spikes will greatly assist a plant in regaining its lost vigour. On the other hand, the removal of the spikes from healthy specimens will often result in mischief by causing the plants to grow out of season. Rotting of the new pseudo-bulbs sometimes occurs shortly after the cutting of the flower-spikes from these autumn and early winter flowering kinds, particularly Cattleya aurea and its hybrids. Precaution should be taken to prevent this by cutting the scape clean out from the base as soon as the blooms are over. A little powdered charcoal placed on top of the cut surface will help to dry up any moisture and often prevent rotting. The resting period of the members of this section commences soon after the plants cease flowering, and the majority will remain dormant till next spring. Naturally the water supply must be somewhat diminished, but to dry these plants, or other pseudo-bulbous Orchids, severely, directly the growth apparently ceases, means depriving the pseudo-bulbs of a certain amount of substance that will be needed later on. Therefore, gradual diminution in watering should be practised, and as long as the roots are sufficiently active to take up moisture this should be judiciously supplied. Careful attention paid to these matters now will be

rewarded with less shrinkage of the pseudo-bulbs in midwinter, when the plants should be completely at rest.

LÆLIA ANCEPS.—This useful winter-flowering Orchid has revelled in the hot weather, and the plants now have their flower-spikes well advanced, especially the coloured forms, which are always the first to expand their blooms. As the flower stems develop, there is often a gummy exudation from their apices. This matter should be frequently removed with a wet sponge, otherwise the upper bracts will stick to the flower-buds and prevent the blossoms from properly opening. The long spikes will make it necessary to place the plants on the stage till the flowering season is past; they should be placed where they will receive all the light possible, and abundance of fresh air whenever outside conditions are favourable. While the plants have been actively growing, a plentiful supply of moisture, both at the roots and in the atmosphere, will have been afforded. This should now be reduced, but the rooting material must be kept sufficiently moist to forward the proper development of the flowers.

CALANTHES.—The deciduous section of this genus commences to bloom in late autumn and maintains a succession of flowers throughout the winter. These plants are now ripening their foliage and pushing forth flower spikes, which should be given every encouragement to develop. Less frequent waterings will now suffice, but the plants should not be allowed to become quite dry until after flowering is over, and the atmosphere of the house should be kept rather drier, especially when the flowers begin to open. Calanthes, at all seasons, require a light and airy position, and in their present stage the plants should be so arranged that their needs in these important respects may be fully satisfied.

EPIDENDRUM VITELLINUM MAJUS.—This autumn-flowering Orchid is always an attractive subject, and one of the easiest to cultivate, if grown in a well-ventilated structure where a cool, intermediate temperature is maintained. When the plants are growing freely, liberal supplies of water at the roots are needed, following up such treatment during the flowering period and afterwards till the bulbs are fully matured, but during the winter season, when the plants are resting, moisture afforded at long intervals will suffice to keep the pseudo-bulbs firm, the roots healthy, and the foliage fresh.

CŒLOGYNES.—Plants of the species C. cristata are about completing their season's growth, and the plentiful supply of water hitherto afforded them should be reduced in amount. From now onwards, until after the flowering stage is over, the rooting material, whilst never being allowed to become quite dry, should be just kept moist enough to preserve the pseudo-bulbs in a plump condition. Henceforward these plants should be afforded all the light and air possible, and a cool intermediate atmosphere; any that were re-made this year should not be allowed to flower, as it usually takes

two seasons to re-establish such plants and fit them for flowering. C. ocellata is an elegant little member of the genus that flowers in winter, it is easily cultivated, and when fairly well established never fails to bloom. The rooting material of these plants should never be allowed to get dry until after the flowering season, when less moisture should be given; they should be grown in a cool intermediate temperature. C. barbata is another pretty and distinct winter-flowering species that succeeds well in a similar temperature. During its period of active growth the plant enjoys a fair supply of water at the roots, but much less after its pseudo-bulbs are matured. The flowers will continue in perfection for a long period, provided they are kept free from damping.

PREPARING FOR WINTER—During the dull days of winter all the light possible is needed by the plants, hence no time should be lost before cleansing the houses and putting everything in order. It is a great advantage if each house, as it is taken in hand, can be cleared of its occupants, to permit of the ventilators being thrown wide open for a few hours after the work is done to sweeten the atmosphere before re-housing the plants. Cleanliness forms an important feature in the successful cultivation of all plants, but none more so than Orchids. By keeping everything clean about the plants, and giving reasonable and proper ventilation, the plants will grow cleaner and be freer from insect pests. It is advisable to prepare for winter by reducing the temperature in all the houses a few degrees by night, and also by day in the absence of sun-heat. Much less moisture is now required, especially in the cooler divisions, where evaporation is slow. Henceforward all Orchids need all the sun-heat and light available, and, so long as the sun is capable of raising the degree of warmth in the houses considerably during the middle hours of the day, full advantage should be taken by the cultivator to admit fresh air, but fog and frosty air must always be excluded. A careful watch should be kept on the outside conditions, for as the wind changes, so will the temperature of the houses be effected.

CATTLEYA WARSCEWICZII ROCHELLENSIS.—This beautiful albino variety appeared in 1888, in the establishment of Messrs. Siebrecht and Wadley, of New York, whence it passed into the collection of F. L. Ames, Esq. It is figured in *Reichenbachia*, ser. I., ii, t. 85. On July 21st, 1921, a First-class Certificate was awarded to Cattleya gigas rochellensis at the Manchester Orchid Society, and although the name gigas is generally used in gardens on account of its descriptive nature, it is, in fact, a later name than the somewhat awkward Warscewiczii. The plant shown at Manchester by Dr. F. Bedford had pure-white sepals and petals, a light rose tint on the lip, and yellow in the throat.

BROMHEADIA FINDLAYSONIANA.

WHEN Lindley examined a curious Orchidaceous plant that has been found in Singapore by Findlayson he referred it, "with great doubt," to Grammatophyllum, under the name G. ? Findlaysonianum (*Gen and Sp. Orch.*, p. 173). Subsequently it flowered in South Wales with J. D. Llewellyn, Esq., who received it from Cuming, with the memorandum that it had been "dug out of a bog in Sumatra." Lindley afterwards had the advantage of examining a perfect specimen in flower, and found that although nearly related to Grammatophyllum it was, in fact, very distinct. He availed himself of the opportunity of adding to the list of genera the name of Sir Edward F. Bromhead, Bart., who was an investigator of the natural affinities of plants. A little later it flowered in the collection of the Duke of Northumberland, and was figured as Bromheadia palustris (*Bot. Reg.*, 1844, t. 18).

Mr. H. N. Ridley describes the plant as the finest in the genus (*Journ. Linn. Soc.*, xxxviii., 331), but considered it most inaptly named B. palustris, for it prefers hot sunny places as its habitat. It is a stiff plant, from one to six feet in height, with spreading distichous leaves rather distant below and gradually passing into sheaths at the top of the otherwise bare stem. The flowers open singly, are large and conspicuous and sweetly scented, opening in the early morning and closing very soon, which is characteristic of the genus. They are visited by the common carpenter bee and are often fertilised. All the plants produce their flowers at the same time. The species is common in Singapore, growing usually among the ferns and long grass, in open districts, rarely in shady or damp places. It is distributed over the whole of the peninsula, from Siam southwards, and in the Malay Islands as far east as the Philippines.

POSITIONS OF PLANTS IN HOUSES.—A great deal is dependent on the positions in which plants are placed in our Orchid houses. They will often be found to thrive better in one part of the house than in another. This is found out by experience and persevering observation. If a plant does not do well in one spot, try it in another, and when a suitable place is found let it alone. It is astonishing how differently various plants will thrive in different houses. We have found this out by reason of want of space in our Orchid Houses compelling us to place certain plants in house having a different temperature, and in which it has turned out that they have succeeded far better, made better growths, and bloomed more freely. When we find they succeed in this way, we keep them under these conditions, treating them otherwise according to their especial wants.—B. S. WILLIAMS' *Orchid Manual*.

SANDERS' LIST OF ORCHID HYBRIDS.

SO numerous are the new hybrids that have bloomed since the last issue in 1916 of Messrs. Sanders' Hybrid Orchid List, that an entirely new edition upon an enlarged scale has become imperative. This work has now been published in a strongly bound volume of no less than 225 quarto pages, with an additional 18 pages as an Addenda, and bringing the records up to September, 1921. It contains the names and parentages of all the known hybrid Orchids, whether introduced or artificially raised, and on that account will prove of the greatest value not only to present-day raisers, but to every oneinterested in Orchidology. The names are arranged in tabular, alphabetical form, so that all hybrids from each species or hybrid may be ascertained at a glance. These tables will be found an essential and trustworthy guide in every way, and will help to avoid the duplication and synonymy in the nomenclature. The system is that adopted by the Orchid Committee of the Royal Horticultural Society. An alphabetical list of generic parents cannot fail to be of considerable value now that so many genera have been linked together, and the inclusion of this list in the fore-part of the work is a matter that adds much to the utility of the book. Interleaved blank pages are provided for the recording of additional hybrids as they appear. Sanders' List is concise, reliable and indispensable, and it is difficult to imagine how any cultivator of these plants can afford to be without a copy.

The late Mr. J. Gurney Fowler took a great interest in the nomenclature and correct recording of hybrid Orchids. He rightly believed that every hybridist wants to know, with as little delay as possible, firstly component parts of the plant he proposes to use as a parent, and secondly how other growers have employed it in the making of existing hybrids. The hybridist is thus in the position of chosing either to confirm results which have already been satisfactory with other raisers, or to branch out in a new experiment of his own. With the aid of Sanders' List it is a comparatively easy matter to look through the various sections and obtain, almost at a glance, the required information. When one considers the thousands of hybrids that have been raised and named, it will be realised that the compilation of this work has been a matter of considerable research, and one that could only be undertaken by a fully experienced authority. We are full of praise for the work, and in a subsequent issue will refer more especially to the various sections, and the great and rapid progress made in hybridisation during recent years.

This valuable book is published by Messrs. Sanders, St. Albans, price forty-five shillings, including the Addenda, from whom copies may be obtained.

BRITISH ORCHIDS.

DURING the past summer more than ordinary interest has been taken in British Orchids, and the finding of the rare Lizard Orchid, Orchis hircina, has again been reported. Writing to the *Gardeners' Chronicle*, August 27th, 1921, Mr. A. D. Webster states: "In private grounds near Dover there is a colony of the plant. There are three other stations in which the plant grows by the side of the ancient Roman roadway in Kent." Regarding the Irish Spiranth, Mr. Webster remarks that it "occurs only in three counties, and is unknown elsewhere in Europe, its nearest known place of growth being in North America, where, in British Columbia, I found it in some quantity. The brown Man Orchid has only been recorded from a very few stations in Southern England, and still exists on the chalky reefs of the Westerham hills."

Mr. S. Graveson remarks (*Gard. Chron.* Sept. 17th, 1921):—"I am surprised to read that Mr. Webster considers Orchis fusca a rarer plant than O. hircina. That is certainly not my experience after a ten years' residence in Kent. During that period I saw O. hircina once only, but O. fusca was always to be found in quantity in certain beech woods, in open glades. Mr. Webster does not mention the very rare Habenaria intacta that grows in Co. Clare, Ireland, and nowhere else in N. Europe. I had the pleasure of picking spikes of this in May, this year."

ALBINO CATTLEYAS.—In order to call to mind the pure-white nature of certain albino Cattleyas, several appropriate names have been used. They include Albania, Albion, Mont Blanc, Snowdon, Snowdrift, Snowdrop, Snowflake, and Snow Queen. An albino Cattleya sometimes has yellow on the disc and throat of the labellum, and although devoid of the purple pigment, its whiteness may vary from snow-white to chalk-white and even cream-white.

CATTLEYA GERTRUDE HOLLINGTON.—This elegant hybrid is the result of crossing C. Fabia with C. Prince John (Dowiana × Hardyana). An unusually fine form has recently flowered in the collection of D. Barnard, Esq., Leighton Dene, Watford, who has given it the varietal name Isidore Chapman. The flower is above the average size, while the broad and erect petals, as well as the sepals, are of a rich purple colour, over which there is a bright sheen, giving the whole flower a very pleasing effect. The expansive labellum is purple at the apex, and the side lobes have a large yellow area derived from C. Warscewiczii, a species contained in the parentage of C. Prince John.

ROYAL HORTICULTURAL SOCIETY.

Sept. 27th, 1921.

MEMBERS of the Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Frince Tadashige Shimadzu, Messrs. J. O'Brien (hon. sec.), Fred. K. Sander, S. W. Flory, J. Cypher, J. Wilson Potter, F. J. Hanbury, Gurney Wilson, E. R. Ashton, A. McBean, and C. H. Curtis.

AWARDS OF MERIT.

Brassolæliocattleya Golden Crown (Blc. Joan × C. Venus), from H. T. Pitt, Esq., Stamford Hill.—An elegant hybrid carrying a spike of three medium-size flowers, the thick segments Indian gold in colour, the lip mottled and tinged with crimson-buff.

Brassocattleya Sofrano var. Prince of Orange, from Messrs. Charlesworth & Co.—A large flower of yellow colour, the elongated labellum widened at the apex, and the petals erect and stiff in habit.

GROUPS.

Messrs. Charlesworth & Co. were awarded a Silver-gilt Flora Medal for an excellent exhibit in which were several plants of Cattleya Hardyana with 4 flowers on a spike; C. Cerebus (intertexta × labiata), bearing a large pure-white flower; C. Mrs. Pitt, unusually well covered; C. Naidia, yellowish; several finely-flowered plants of Dendrobium Phalænopsis; the interesting Wilsonara insignis; Odontioda Muriel (Oda. sanhagensis × Odm. Alexandrina), with crimson-chocolate coloured flowers, the crest bright yellow; and Blc. Tucuman, terra-cotta, with crimson tinge.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. Thurgood), received a Silver Flora Medal for an excellent group, containing some well-flowered plants of Chondrorhyncha Chestertonii, the curious Megaclinium maximum, Cirrhopetalum Mastersianum, Cypripediums in variety, the rare Odontoglossum grande Pittianum, Cattleya Wendlandii, with numerous flowers, Miltonia Clowesii, and the autumn-flowering variety of M. vexillaria, as well as three strong plants of Phalænopsis Esmeralda.

Messrs. Sanders were awarded a Silver Flora Medal for an attractive exhibit, in which were Cattleya Fabia var. Quest, with a spike of three richly-coloured flowers, C. Prince John, several fine plants of C. Hardyana, the choice C. Lady Veitch, with pure white flowers, C. Peetersii alba, a good variety of C. Gaskelliana alba, Cypripediums Maudiæ and gigas, a splendid form of Phalænopsis amabilis, and Bc. Ilene var. conspicua, with two large flowers of fine form and colour.

Messrs. Flory & Black received a Silver Banksian Medal for a choice selection of Cattleyas, several being new hybrids, and including Lc. Kennie (C. Gaskelliana × Lc. Gladiator), Lc. Lydia F. Mollet (C. Tityus × Lc.

Nella), rich purple, the lip tinged with crimson, Cattleya Hardyana alba in fine form, Bc. Olypus, with a large pinkish flower, and Bc. Heatherwood, very prettily coloured.

Messrs. Stuart Low and Co. exhibited Vanda cœrulea, good plants ot Cypripedium Maudiæ, Cattleya Adula, large and of thick texture, C. Gaskelliana alba with five flowers, C. Enid, very delicate, and the new Cattleya Vishnu (C. Lueddemanniana var. Empress × C. Dusseldorfei Undine) with a large pure-white flower.

Sir Jeremiah Colman, Bart., Gatton Park, Surrey, exhibited the pretty Cirrhopetalum miniatum, a fine specimen of Pleurothallis velaticaulis, the quaint Masdevallia myriostigma, with about 50 flowers, Catasetum saccatum, and Lc. Viscount Devonport (Lc. St. George × C. Fabia), a handsome flower of rose colour, all the segments suffused with purple, the lip broad and with gold colour in the throat.

General Sir Arthur Paget, G.C.B., Warren House, Kingston Hill (gr. Mr. Wm. J. Penton), exhibited Cattleya Krishma (C. Harrisoniæ × C. Chloe), with greenish-buff sepals and petals, the lip intense crimson and the column white.

Messrs. Cypher & Sons staged Cypripedium Elatior Rex, an excellent flower; C. Priam, good form and colour; Cattleya Astron, with three pure-white flowers; C. Hardyana, with a spike of five large and richly-coloured flowers; a very fine variety of Oncidium Papilio; and an unknown Maxillaria species.

October 4th, 1921.

Members of the Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. J. O'Brien (hon. sec.), Gurney Wilson, J. T. Barker, W. J. Kaye, F. J. Hanbury, C. H. Curtis, and A. Dye.

On account of the Great Fruit Show, only plants for special awards were exhibited.

AWARDS OF MERIT.

Læliocattleya Copper King (C. Oberon × Lc. Phœbus), from Sir Jeremiah Colman, Bart., Gatton Park, Surrey. The special feature in this novelty is the reddish-copper colour. The petals are inclined to droop, but may improve in subsequent years as the plant gains in strength. The elongated lip has the broad apex crimson, the side lobes mottled, and the isthmus golden.

Cattleya Elfin, from His Grace the Duke of Marlborough, Blenheim Palace (gr. Mr. J. T. Barker). Of excellent formation and substance, the whole flower intense purple, the interior of the lip veined with gold.

From the Blenheim Palace collection also came Cypripedium Duchess of

Marlborough (Lord Ossulston × Leeanum Clinkaberryanum), the broad dorsal sepal white with an apple-green base; L.c. Raja with a spike of three amber-yellow flowers; and Brassocattleya Blenheim King, a large flower of mauve-pink colour, the broad lip purple and with yellow discs on the side lobes.

October 18th, 1921.

Members of the Committee present:—Sir Jeremiah Colman, Bart. (in the Chair), Prince Tadashige Shimadzu, Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. sec.), Walter Cobb, C. H. Curtis, Fred. Sander, H. G. Alexander, J. Cypher, Gurney Wilson, W. H. Hatcher, Pantia Ralli, T. Armstrong, S. W. Flory, A. McBean, Stuart Low, W. J. Kaye, and A. Dye.

FIRST-CLASS CERTIFICATES.

Læliocattleya Ivanhoe, The Dell variety (C. Dowiana × Lc. eximia), from Baron Bruno Schröder, Englefield Green, Surrey. A superb hybrid of fine constitution and with large flowers, carrying forward all the meritorious points of C. Dowiana, C. Warneri and L. purpurata.

Odontoglossum Armstrongii, from Messrs. Armstrong & Brown. A remarkable result which opens up an entirely new section. The flower measures 4ins. across, the sepals 1½ins., the petals 1¾ins. in width. Dorsal sepal unspotted, the lateral ones spotted with lemon yellow. The petals bear a large horse-shoe-like blotch of a similar colour, while the broad labellum is blotched with a brighter and deeper yellow, and having an eye-brow-like line of faint yellow colour near the margin. Column white, anther cap yellowish. The crest of the labellum indicates that Harryanum or luteopurpureum is included in the parentage. Apex of labellum apiculate.

AWARDS OF MERIT.

Cypripedium Bedfordiæ (Actæus revolutum × Shogun), from Dr. F. Bedford, Fulford, York. A noble flower of large size, the dorsal sepal very broad, with a wide, white band round the edge, the base emerald green, marked with vertical lines of purple spotting. The horizontal petals light brown, the pouch darker.

Cattleya Fabia (aurea × labiata), from Lieut.-Col. Sir George Holford, K.C.V.O., Westonbirt. In point of coloration this is the finest variety yet seen. The whole flower being of uniform rich purple, over which is a soft rose-crimson tint.

GROUPS.

Baron Bruno Schröder, the Dell, Englefield Green, Surrey (gr. Mr. J. E. Shill), received a Silver-gilt Flora Medal, for a splendid exhibit of 15 specimen plants of Laeliocattleya Ivanhoe, and two special forms of Lc.

Schröderæ. Each spike carried about four large flowers, all the segments being of thick texture and richly coloured.

Messrs. Stuart Low & Co. were awarded a Silver-gilt Flora Medal, for an extensive exhibit containing many superb Cattleyas, and of which mention may be made of C. Harrisoniana alba, Stanley's var., C. Adula, C. Felix, very dark, and C. Hardyana, with the petals mottled. Brassocattleya Ilene, with a very large rose-pink flower, Bc. Maroniae with a spike of 3 fine flowers, and Laelia Dayana delicata were also noted. Dendrobium chrysanthemum, D. formosum, and the now scarce Odontoglossum Harryanum were in fine form.

Messrs. Sanders received a Silver Fora Medal, for an attractive group containing, Cattleya Mary Sander, C. Fabia alba, with a spike of five good flowers, C. Ancre (Hardyana × Peetersii), Miltonia insignis, probably with M. Bleuana parentage, M. candida, several excellent Cypripediums, the pretty Odontonia brugensis, and O. Farnesiana (M. Warscewiczii × O. Edwardii), with chocolate-coloured flowers.

Messrs. Hassall & Co. staged Blc. Thyone var. perfecta, a large flower with broad segments, the petals stiff and erect, and the whole flower apricot yellow in colour, the labellum having a narrow rose margin and median line of colour.

Messrs. Flory & Black exhibited Lc. Venus, Lc. Carmencita, Lc. Vera, C. Prince John, with white sepals and petals, C. Brenda, with a snow-white flower, and Sc. Perseus, a charming hybrid between C. Maggie Raphael and Sc. Thwaitesii.

Dr. F. Bedford, Fulford, York, exhibited the interesting Angraecum Ellisii, with a spike of nine flowers.

Pantia Ralli, Esq., Ashtead Park, Surrey, showed Lc. Queen Alexandra (C. Trianae × Lc. Bella), with a spike of three rose-purple flowers.

H. T. Pitt, Esq., Rosslyn, Stamford Hill, staged Lc. Cambrai, a handsome hybrid between Lc. Barbrossa and C. Hardyana.

A. J. Hollington, Esq., Enfield, exhibited Lc. La France (C. bicolor × L. Tenebrosa), with a spike of 4 flowers, sepals and petals chocolate, lip crimson colour. Also C. Krishna, dark rose-purple.

C. J. Lucas, Esq., Warnham Court, Horsham, exhibited Lc. Serbia, a large purple flower, Lc. Golden Wren (C. iridescens × Lc. Thyone), bronze-buff colour, and C. Mantinii, rich purple, and excellent formation.

E. R. Ashton, Esq., Broadlands, Tunbridge Wells, staged Blc. Tucuman, resulting from the crossing of Blc. Cooksonii and C. Rhoda. The spike carried three medium-sized flowers of bright golden apricot colour, the lip mottled with dull crimson.

Lieut.-Col. Sir George Holford, K.C.V.O., exhibited Lc. Le Brasseur Hye, a bold flower derived from Lc. Aphrodite × C. gigas.

Messrs. A. J. Keeling & Sons, staged Cypripedium Tracery, a charming hybrid between Fairrieanum and Psyche. Also Cyp. Moira magnificum, with a crimson-purple dorsal sepal.

Mr. C. F. Waters, Balcombe, staged a hybrid between C. Dusseldorfei and C. O'Brieniana alba, yielding a pure-white flower.

MANCHESTER ORCHID SOCIETY.

September 8th, 1921.

MEMBERS of the Committee present: Rev. J. Crombleholme (in the Chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, D. A. Cowan, A. G. Ellwood, J. Evans, A. Hanmer, J. Howes, A. Keeling, D. McLeod, E. W. Thompson and H. Arthur (Secretary).

A gold medal was awarded to S. Gratrix, Esq., for a group of well-grown Cattleyas; a Silver-gilt Medal to Mrs. Bruce and Miss Wrigley for an excellent exhibit of Cypripediums, etc.; and a Silver Medal to the Rev. J. Crombleholme for a fine group of Cypripediums.

FIRST-CLASS CERTIFICATES.

Cattleya Hardyana alba var. Emperor, C. Hardyana perfecta, and C. Thebes magnifica; from S. Gratrix, Esq.

Lc. Athene var. Edgemoor, and C. Hardyana collosa, from A. Hanmer, Esq.

Lc. Golden Wren var. Purity, from Captain W. Horridge.

Miltonioda Ellwoodæ (M. Charlesworthii × M. Harwoodii), from P. Smith, Esq,

AWARDS OF MERIT.

Lc. Golden Palatine (Lc. Elinor × C. Octave Doin), Lc. Glory (Lc. fulvescens × Lc. Thyone), and Lycaste leucantha, from S. Gratrix, Esq.

Lc. Lucille-aurea (C. aurea × Lc. Lucille), from A. Hanmer, Esq.

CULTURAL CERTIFICATES.

Mr. J. Howes, for Cattleyas; Mr. A. Burns, for Arachnanthe Lowii; Mr. W. G. Giles, for Cattleya Hardyana colossa; and Messrs. Keeling & Sons, for Oncidium bicallosum.

September 22nd, 1921.

Members of the Committee present; Rev. J. Crombleholme (in the chair), Messrs. A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Cypher, Dr. R. N. Hartley, J. Howes, A. Keeling, D. McLeod, J. Thrower E. W. Thompson and H. Arthur (Secretary).

A Large Silver-gilt Medal was awarded to S. Gratrix, Esq., for a group of Cattleyas in great variety; a Silver-gilt Medal to Mrs. Bruce and Miss Wrigley for a group of splendidly grown plants of Odontoglossum grande;

a Large Silver Medal to A. Hanmer, Esq., for a group of choice hybrids; a Silver Medal to the Rev. J. Crombleholme, for an interesting group; a Large Silver Medal to Messrs. Cypher and Sons for an extensive exhibit; and Silver Medals to Messrs. Sanders and Messrs. J. Cowan & Co.

FIRST-CLASS CERTIFICATES.

Lc. Miranda, Bc. Pallas, C. Venus majestica, Lc. Soulange var. Monarch, Lc. Sargon, and Lc. Eleanore alba var. imperialis, from S. Gratrix, Esq.,

Cattleya Hardyana alba Ankaret, C. Rajah var. The Quest, and Bc. Apollo var. His Majesty, from A. Hanmer, Esq.,

Cattleya aurea Haddon House var., and Lc. Carmencita Haddon House var. from P. Smith, Esq.

Odontoglossum grande Bridge Hall var., from Mrs. Bruce and Miss Wrigley.

Bc. Windsor, from Mrs. Gratrix.

Lc. Soulange var. Brilliant, from Dr. F. Bedford.

AWARDS OF MERIT.

Lc. Golden Wren var. West Point, Cattleya fulvescens var. Comet, from S. Gratrix, Esq.

Cattleya Marriottiana alba, from Mrs. Gratrix.

Cattleya Sibyl var. Oedippe, from A. Hanmer, Esq.

Cattleya Marriottiana var. Fairy, from Capt. W. Horridge.

AWARDS OF APPRECIATION—FIRST CLASS.

Oda. Lerna var. Joyce Hanmer, from A. Hanmer, Esq.

Cattleya Grenadier, from Messrs. Sanders.

CULTURAL CERTIFICATES.

Mr. J. Howes for Cattleyas and hybrids; Mr. E. W. Thompson for Lc. Carmencita var. Haddon House; and Mr. A. Burns for Odm. grande.

Under the heading of Awards of Merit at the Meeting on July 7th, Odm. crispum Triumph, Oda. Colinge rubra and Cattleya Hesta var. Edgemoor were exhibited by A Hanmer, Esq., and not by S. Gratrix as stated.—H. Arthur, Secretary.

DENDROBIUM TERETIFOLIUM.—The leaves of this graceful little Australian species somewhat resemble those of Oncidium Jonesianum, and the roots are thick and fleshy, somewhat like those of a Phalænopsis. The inflorescence is pendulous, and the flowers white with a few purple markings on the lip. The sepals and petals are 1¼ inches long and gracefully attenuated, and the front lobe of the lip recurved, and very strongly undulate, the margins being almost doubly-fluted. It flowered in the collection of S. G. Lutwyche, Esq., Eden Park, Beckenham, during the winter of 1902-3.

THE ORCHID REVIEW.

VOL. XXIX] DECEMBER, 1921. [No. 342.

NOTES.

DENDROBIUM CUCUMERINUM.—This curious Dendrobe is figured in the *Botanical Register*, 1843, t. 37, and in describing it Lindley remarked: "It very much resembles a heap of little cucumbers, whence the name has been derived. The flowers appear from the base of the cucumbers in threes. They are dirty white, with long narrow sepals and petals striped with pink. and a three-lobed lip, whose middle division is crisped very much, and five wavy elevated ridges along its middle. A native of new Holland, whence it was sent to Messrs. Loddiges from Mr. Wm. MacLeay."

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LEPTOTES UNICOLOR.—This little rarity was originally described by Rodrigues in 1877 (*Gen. et Sp. Orch. nov., i., p.* 47), who gave as its habitat the trees on the banks of the Rivers Dourado, das Antas, and Sapucahy, and near the city of Alfenas, in the province of Minas Geraes. Regnell also found it near Caldas. The leaves are very fleshy, subterete, and about two inches long. The flowers, generally borne in couples, are of a uniform pale lilac colour, the segments scarcely an inch in length. It flowered in the Royal Botanic Garden, Glasnevin, more than twenty years ago, and on comparison with Rodrigues' original drawings, was found to be identical.

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ORCHIDS OF EASTERN ASIA.—Under the title Orchideologiæ Sino-Japonicæ Prodromus, Dr. Rud. Schlechter has published a critical review of the Orchids of Eastern Asia. The work occupies 319 pages. Section I. is devoted to the distribution of the Orchids in East Asia and their relation to these of adjoining countries, and includes synoptic tables of the various genera in Japan, Korea, Formosa, China, etc. Section II. comprises descriptions of 75 new species. Section III. is taken up with a revision of the already known Japanese and Chinese Orchids, which are classified in no less than 116 genera. The work is completed with a copious index, the synonyms being placed in brackets, and forms a most useful work of reference to the Orchids of these countries.

THE REV. JOHN CROMBLEHOLME.—The *Gardeners' Chronicle*, in its issue of November 5th, includes an excellent portrait of the Rev. J. Crombleholme, Chairman of the Manchester Orchid Society. An accompanying appreciative article of his work in connection with the breeding of Cypripediums states that he flowers on an average 200 new seedlings each year, and in the near future hopes to flower a similar number annually of Cymbidium seedlings. During the present season, the Rev. J. Crombleholme has obtained no fewer than eleven First-class Certificates and seven Awards of Merit for new Orchids at Manchester.

EXPORTING ORCHIDS TO JAPAN.—The *Gardeners' Chronicle*, in its issue of October 8th, called attention to our article on Exporting Orchids to Japan (p. 103), which has brought forth a letter from Mr. Ralph E. Arnold, of Cirencester, who, writing to the *Gardeners' Chronicle* (Nov. 5th, p. 237), states: "During the years immediately preceding the war, Messrs. J. Cypher & Sons despatched many thousands of Orchids to Japan, and judging from photographs received by the firm from the East, the plants were a huge success; in the case of some genera they seemed to be more at home in Japan than they are in Europe. The plants were despatched in the early autumn, and all the well-known genera were represented, in addition to many botanical varieties. Several consignments were exported during a period extending over several years."

CYPRIPEDIUM BEDFORDIÆ.—That differences of opinion exist is nothing new, and it has long been recognised that the awards of the R.H.S. and the M.O.S. are not of an equal standard. A recent case is Cypripedium Bedfordiæ, which was shown at the M.O.S. on October 6th, 1921, and given a First-class Certificate and a Silver Medal. Twelve days later it was exhibited at the R.H.S., and placed in the second grade by being granted an Award of Merit. Cypripediums are certainly more in favour with amateurs in the North of England than in the South, and it has more than once been said that these plants are not fully understood, nor their meritorious points sufficiently appreciated, by members of the R.H.S. Orchid Committee. In the present instance the R.H.S. Committee were of opinion that the flower was deficient in coloration, and the Award of Merit was given more specially for the large size of the flower. The Secretary of the R.H.S. Committee described the dorsal sepal as "large," and the report of the M.O.S. states it to be "enormous." As both these adjectives are of little value in recording the real size we give the actual measurements: Dorsal sepal, $3\frac{3}{4}$in. wide, $2\frac{1}{2}$in. high; ventral sepal, $2\frac{3}{4}$in. wide; petals, $2\frac{3}{4}$in. long; labellum, or pouch, $2\frac{1}{2}$in. long, $1\frac{1}{2}$in. wide; width of flower across the petals, $5\frac{1}{2}$ins.

ORCHIS PURPURELLA.

By Rev. T. STEPHENSON, D.D., and Mr. T. A. STEPHENSON, M.Sc.

BY the courtesy of the Editor, we are able to publish a photograph of Orchis purpurella, Stephenson, which was described as a new species of Marsh Orchis in the *Journal of Botany*, July, 1920. Also in the same

ORCHIS PURPURELLA, STEPHENSON.

journal, Nov., 1920, coloured figures were given of the two forms, pl. 556, figs. 9 and 10; and in May, 1921, side views of the same flowers, pl. 559,

figs. 21 and 22. The species is normally dwarf, about 1 to 1·5 dm. high, with leaves more or less covered with very small spots, which are often found only at the base or tip of the leaves. The flowers are of a very rich dark purple.

We distinguish two forms, the one (a) herewith reproduced, we regard as the type, with a pointed diamond-shaped lip, scarcely divided, and a lip-pattern of very heavy broken dark-purple lines. This is a very beautiful plant, which we have had under observation for years at Aberystwyth. This summer it has been found by Dr. Druce at Portmadoc. The other form (b) is found in Westmoreland, the Isle of Arran, and elsewhere in Scotland. It differs from form (a) in having a more rounded, three-lobed lip, and a pattern of rather narrower, less broken lines, very like the usual latifolia type, from which it is distinguished by its dwarf habit, its dark brilliant colour, and the minute leaf-spots which are never streaks or blotches.

The species has also been observed in some stations in Holland. In the photograph the leaf-spots are scarcely visible, except on one or two leaves, though on all the plants they were fairly numerous. The height of the plants was about 1·5 dm. The specimen given is quite typical.

Several hybrids have been noted. At Aberystwyth form (a) crosses with O. latifolia and with O. ericetorum. Coloured drawings of these hybrids are given in pl. 556 above referred to, figs. 11 and 12. The first is found in fair numbers, the second only occasionally. Of form (b) the corresponding hybrids with O. latifolia and O. ericetorum have been found, and also with O. Fuchsii, and two exceedingly interesting forms crossing with Gymnadenia conopsea. One of these was figured in the *Orchid Review*, Nov., 1921, and both were briefly described. The hybrids with O. latifolia and the Spotted Orchids are fairly easy to identify. They have about half the tone-depth of the purpurella parent, and are intermediate in other ways, as may be seen by comparing fig. 11 on the coloured plate with figs. 9 and 13, and fig. 12 with figs. 9 and 17.

The question was carefully considered whether we had not here simply O. cruenta, O. F. Mueller. We have not seen living specimens of this plant, but as far as can be judged from the literature, it is not the same as O. purpurella, being nearer to O. incarnata. One or two records of O. cruenta which have appeared, *e.g.*, in Cumberland and Durham, are almost certainly our plant.

Since the preceding paragraph was written, we have been able, by the courtesy of Dr. Druce, to see a sheet of specimens of O. cruenta from Sweden, by the examination of which we are enabled to speak with much more confidence than formerly, since they were very well preserved. There can be no doubt that O. cruenta is nearer to O. incarnata than is O.

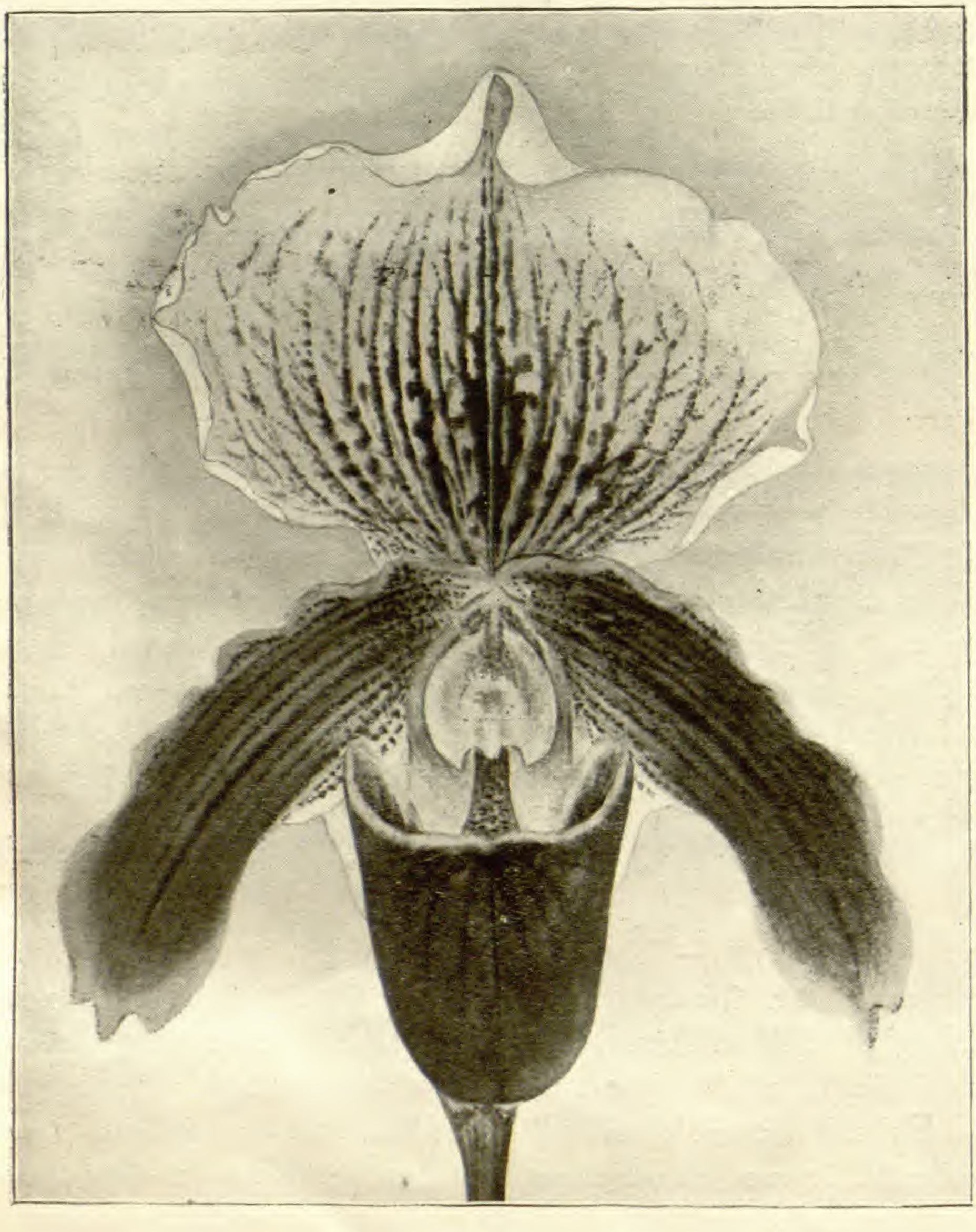
purpurella. It has the same habit of leaves, the same *small* flowers with *recurved lips*, and a very similar lip-pattern. O. purpurella has broader leaves and a larger, flatter lip, with a very different pattern. It is not safe to say much about the colour of dried specimens, but as compared with O. purpurella, the flowers of O. cruenta appear to be of a paler, pinker purple, and the bracts of a brighter purple, suffused over the whole bract. The spur also is more slender. The difference in the leaves is very marked. In O. cruenta they have very heavy, rather angular spots, or bright purple blotches *on both sides*, very different from the fine dots of O. purpurella, often so scantily distributed. Also the leaf-sheaths of O. cruenta are longer and more funnel-shaped. In fact, O. cruenta might be described as a dwarf, spotted variant of O. incarnata, much as O. purpurella might be in relation to O. pulchella, which is referred to below.

Of form (a) a few individuals are found with leaves unspotted and taller. Form (b) is very closely connected with the plant which Dr. Druce has named O. prætermissa var. pulchella, which occurs plentifully in Scotland. The flowers of the two forms are quite alike. The difference is in the fact that O. pulchella is taller, often quite slender, and has no spots on the leaves. We think that we have here a case in which two unit Mendelian characters are concerned, one for "dwarfness" and one for "leaf-spots," and that two segregates at least have established themselves. At the same time, we think it will be wise to retain the two names, for though in the Isle of Arran the types run into one another, elsewhere they appear separately. The final conclusion will depend on further study in the field.

TRICHOSMA SUAVIS.—This species was brought from the East Indies to Chatsworth by Mr. Gibson, then a collector for the Duke of Devonshire. Concerning it, Gibson states (*Bot. Reg.*, 1842, *t.* 21): "It inhabits the Chirra district of the Khoseea, and grows upon trees in densely shaded woods near the summit of the hills. It has a strong perfume, somewhat resembling Melicgrass, on which account it is highly esteemed by the wood-cutting natives, who are fond of adorning their hair with its blossoms, and which circumstance gave me a clue to its discovery. It is growing here luxuriantly upon a block of wood, and is now filled with dead and living vegetable matter, the latter consisting of the roots and stems of live native Ferns, which are luxuriating with this and other Orchideous plants on the same block of wood." The coloured plate shows the pseudobulbs to be two-leaved, spindle-shaped, about six inches long, and covered with dark brown sheathing seales. On the young shoots the scales are thick and fleshy, and covered with green warts.

CYPRIPEDIUM MINOS.

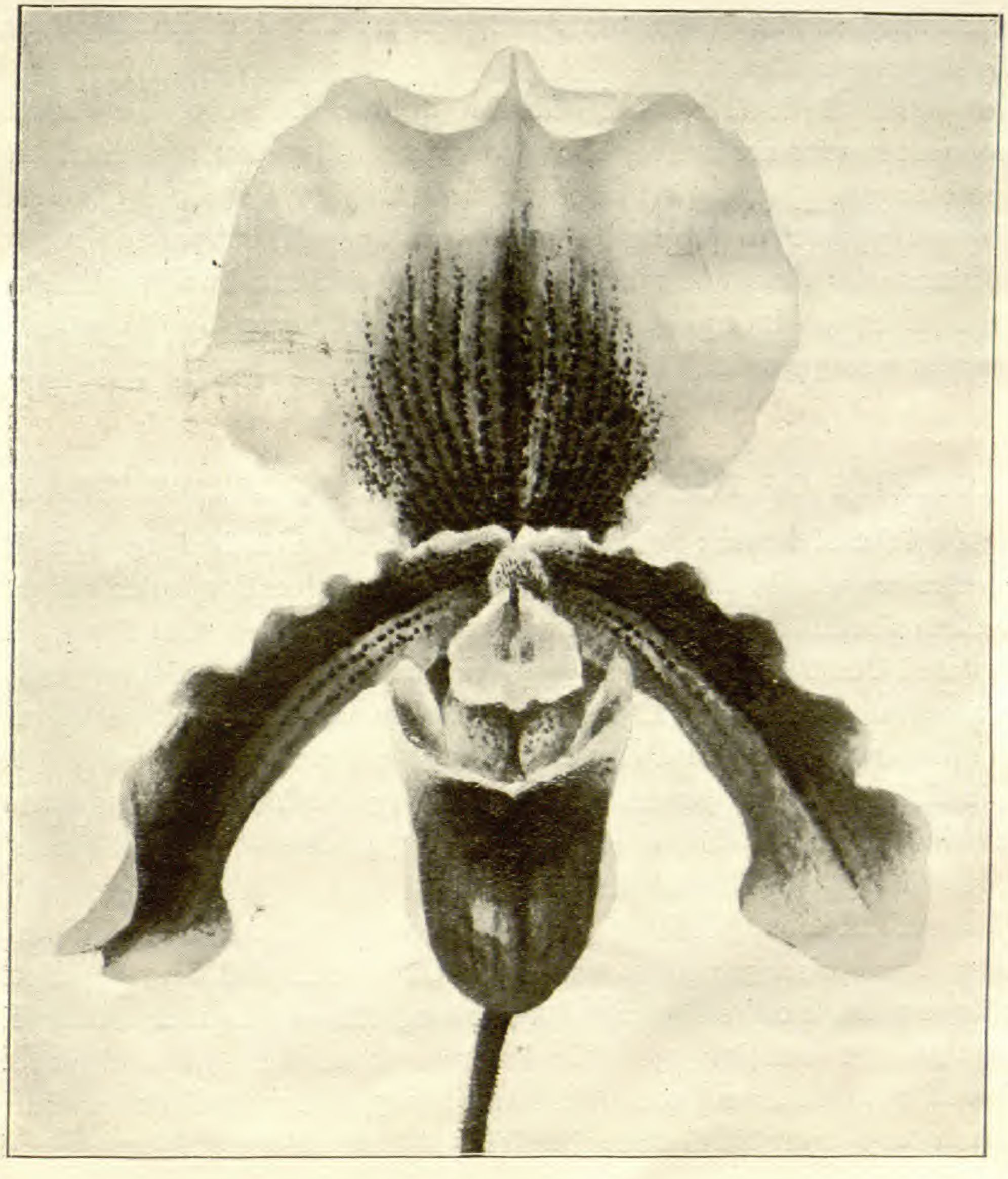
THE parentage of Cypripedium Minos is comparatively simple, being made up of the three species insigne, Fairrieanum and Spicerianum. A combination of the first two yields the pretty C. Arthurianum, and this crossed with Spicerianum produces the elegant hybrid known as C. Minos.



CYPRIPEDIUM MINOS YOUNGII.

To Messrs. Veitch belongs the credit of first flowering it in November, 1893 when an Award of Merit was given by the Royal Horticultural Society. Similar awards were granted to the variety superbum in January, 1895, and to magnificum in December, 1897. In November, 1897, Messrs. Veitch exhibited the variety Alonzo, this being the result of using C. Arthurianum pulchellum as the pollen parent; it was the only seedling raised from this particular capsule.

The most popular variety of C. Minos is that called Youngii. It was raised in the collection of the late Mr. Reginald Young, of Sefton Park, Liverpool, and first flowered in December, 1899. In Febuary, 1903, it received an Award of Merit from the R.H.S., and was then regarded as one of the finest Cypripediums. Even to-day it is much in favour, and rarely



CYPRIPEDIUM MINOS WESTFIELD VAR.

does one enter a Cypripedium house in the autumn without seeing one or more plants in flower. When Messrs. McBean flowered it in January, 1908, it was seen at its very finest, and a First-class Certificate was awarded when they exhibited the plant at the Royal Horticultural Society.

Just as the Youngii variety differs in the matter of elegance from the remainder, so the Westfield variety stands out distinctly on account of its

beautiful dorsal sepal, which is white, the base green and lined with rows of dusky brown dots, and thus showing clearly the influence of the Fairrieanum and Spicerianum parents.

At the Manchester Orchid Society's Meetings, C. Minos has been frequently exhibited. The Walton Grange variety there received an Award of Merit on November 25th, 1897, and Gratrix's variety was granted a similar award on March 6th, 1902. The variety Lowii resembles Youngii, but is slightly smaller.

All plants of C. Minos succeed well in a cool house, for the three component species are natives of cool districts. But when given a higher temperature and plenty of atmospheric moisture, they acquire a more robust habit and appear to propagate more quickly. If cultivated in a cool temperature care must be taken to avoid any access of water when frosty weather is expected, or unwelcome results may follow in the damping off of the tender new growths.

ORCHIDS OF THE SOUTH AMERICAN CORDILLERAS.

A MOST useful work of reference has been compiled by Dr. Rud. Schlechter. It bears the title, "Die Orchideenfloren der sudamerikanischen Kordillerenstaaten," and is issued in three separate books. The first, dated October, 1919, deals with the Venezuelan Orchids, and consists of 100 pages. Following the descriptions of some thirty new species, there is an enumeration of the already known genera and species, these being classified under 103 genera, and including Epidendrum 95 species, Pleurothallis 77, Oncidium 44, Maxillaria 34, Stelis 30, Habenaria 22, Masdevallia 15, aud Odontoglossum 15.

The second book, published January, 1920, is devoted to the Colombian area, and comprises 301 pages, 170 of which are occupied with descriptions of a large number of new species. Followlng this is an enumeration of the known genera, totalling 138. Epidendrum comes first with 167 species, followed by Oncidium 120, Masdevallia 117, Pleurothallis 109, Odontoglossum 105, and Maxillaria 50. The list of Odontoglossums includes many that are now regarded as natural hybrids, among them being O. elegantius, O. Coradinei, O. excellens, and O. Wilckeanum.

The third book, issued May, 1921, includes a general description of the Ecuadorian section of the Cordilleran range. Of the 172 pages, 76 are occupied with descriptions of new species, and 54 with an enumeration of the genera and species. Of the 93 different genera, Epidendrum stands first with 125 species, Pleurothallis 91, Stellis 78, Oncidium 64, Maxillaria 40, and Odontoglossum 34. Bulbophyllum ecuadorense is described as the first species of the genus to be found in Ecuador.

THE BRYNDIR COLLECTION.

ROEHAMPTON LANE, LONDON, S.W.

WHEN Dr. Miguel Lacroze obtained a few Orchids for his garden in the year 1914, it was done more in the way of an experiment to ascertain the degree of success that could be achieved in the cultivation of these plants within five miles of Charing Cross. While it is true that beautiful parks adjoin the Bryndir Garden, towards the end of the year obnoxious fogs sometimes spoil the autumn-flowering Cattleyas. But apart from this temporary trouble, anyone paying a visit to the Bryndir collection will have his attention immediately drawn to the remarkably healthy and vigorous condition of the plants. No further doubt need be entertained as regards the suitability of Orchids for creating a special interest in gardens situated in the vicinity of large cities and towns. As success was obtained in the cultivation of some of the hardier Orchids, other genera have from time to time been added, and now this collection not only ranks as one of the best in London, but is known to Orchid enthusiasts in all parts of the world. Mr. A. Taylor, who commenced his duties here nearly seven years ago, has brought the plants to a high state of cultivation, and with their continual increase by purchase, propagation, and seed-raising, he will soon have a very extensive collection under his care. It is intended in the near future to considerably enlarge the range of glasshouses.

On entering the spacious corridor, one sees some tall plants of Vanda tricolor in flower, also a specimen of the rare Stauropsis gigantea, with its robust habit and thick, leathery leaves. Alongside it are many Cymbidium species and hybrids, several Anguloas, varieties of Lycaste Skinneri, and Odontoglossum grande. This corridor connects five span-roofed houses, each 30 feet in length by 12 feet in width, and all utilizcd for Cattleyas and their hybrids. Each house is heated by six rows of 4 inch hot-water piping, the seedling department having additional lengths for maintaining the high temperature that proves so essential for this part of the work. All the houses have large rain-water tanks sunk in the ground, and their capacity is such that no shortage of water has been experienced during the past unusually dry weather.

The first house contains about two thousand young seedling Cattleyas, and their closely allied genera. All these are cultivated in a mixture of Ar fibre and sphagnum moss, and each in a pot that is of a suitable size for its immediate requirements. In the mating of the various parents, much care has been taken to use varieties of definite distinction, such as pure albinos, dark purple varieties, or R.H.S. certificated plants. Consequently, these little seedlings possess a special attraction, and as they grow rapidly in size with each season's growth, there is an increasing expectation of fine

novelties being produced. Judging from what has already been effected in this collection, Dr. Miguel Lacroze will have many rewards in the near future.

The second house contains a number of choice Cattleyas that are being grown on to flowering-size plants. All have originated from back bulbs of proved varieties, hence, when this certainty of their meritorious character exists no care and labour seem too great to be bestowed upon them. There are several plants of the fine Brassocattleya Cliftoni magnifica, and two nice pieces of the rare Cattleya Warcewiczii var. Firmin Lambeau, having five and four bulbs respectively. Also a small plant of Lælia pumila alba, which by way of an exception fails to grow satisfactorily. When the collections of the late Mr. J. Gurney Fowler and Mr. F. M. Ogilvie were disposed of numerous seedlings were purchased, and these are now rapidly reaching the flowering period. A small plant of the beautiful Cattleya Dowiana Rosita is of interest. Dendrobiums are not numerous, but at the end of this house may be seen D. rubens elegans, a specially fine variety, D. Thwaitesiæ, D. Sibyl, and D. nobile Rappartianum.

In the third house are many superb plants of the well-known hybrids. Mention may be made of the choice Blc. Queen of the Belgians (Bl. Digbyano-purpurata × C. Mendelii), first recorded by Dr. Lacroze in 1916; Brassocattleya Cliftonii, with large flowers, but not quite equal to that known as magnifica; Cattleya Lueddemanniana Stanleyi, with white sepals and petals and an amethyst-purple lip; Cattleya Gravesiana, obtained by crossing C. Mossiæ Wageneri with C. Lueddemanniana var. Empress, and now in sheath; Lc. Momus, with erect and flat petals derived from L. pumila; several plants of Cattleya Cowaniæ alba; Bc. Dr. C. Macdonald (C. Peetersii × Bc. Ilene); Cattleya Eleanore (C. Hardyana × C. Warscewiczii), very vigorous and represented by several specially fine varieties; Lc. Rex (Lc. Haroldiana × C. Tityus); several very fine forms of Lc. Colmaniana (C. aurea × Lc. callistoglossa); and last, but not least, an interesting plant derived from the crossing of C. Tityus Rex with C. Tityus Blenheim variety.

All the plants in the fourth house have flowered, and their special points of merit duly noted. A plant of Slc. Meuse carried four good flowers on one spike, while many other similar examples of cultivation have been achieved. There are upwards of a dozen plants of the variety of Cattleya Warscewiczii known as F. M. Beyrodt; also several distinct forms of Bc. Ilene and Blc. Triune. The large-flowering Cattleya Enid and C. Thora are much appreciated, and so also are Blc. Jupiter, with a very large flower, and Lc. Thyone Bryndir var., having deep yellow flowers, with a crimson band round the labellum (A.M., R.H.S., Aug. 29th, 1916). One of the gems of the collection is Cattleya Monarch Bryndir variety (Trianæ ×

Empress Frederick), which obtained a First-class Certificate at the R.H.S., Jan. 29th, 1918. It has blush-rose sepals and petals, the latter very broad and crimped, and a rich, ruby-purple lip, with a light yellow blotch on each of the side lobes of the labellum.

Passing into the fifth house, there is again ample evidence that the method of cultivation produces well-ripened bulbs and flowers of good substance, for there are excellent Brassocattleyas, a strong plant of Cattleya Maggie Raphael alba; C. labiata cœrulea, with a bluish lip; C. Enid, represented by several with white sepals and petals; C. Harrisoniana alba, Stanley's variety, a nice plant of seven bulbs and two leads; Lc. Ettrick, derived from the crossing of C. aurea and Lc. bletchleyensis, with yellow flowers; several dark varieties of C. Warscewiczii; and Lc. Linda (C. aurea × Lc. Arachne), of which there are two or three excellent varieties. This house also contains a representative collection of Cypripediums, including Maudiæ, Euryades splendens, Leoniæ Gratrixiæ, insigne Harefield Hall, and Thalia magnificum, the latter carrying five large flowers. At the end of the staging may be seen Miltonia Charlesworthii, M. Venus, M. Cobbiana, M. Bleuana Stevensii, and the Blenheim variety of M. Hyeana. Suspended in pans from the roof are healthy plants of Odontoglossum citrosmum, Cœlogyne Massangeana, and others.

The Odontoglossum house measures 50ft. in length and is separated from the block of Cattleya houses just described. Here, again, there is every means of maintaining suitable conditions: large rain-water tanks, under-staging to prevent the heat from the pipes acting directly on the plants, and roller blinds placed about nine inches above the glass. The autumn is not the best time for seeing these plants in flower, but the plants themselves are really excellent examples of good health, having just that nice finish and slight bronze-like tint to the foliage that every careful cultivator likes to witness. Among the Odontoglossums are crispum xanthotes, with yellow spotting, Boadicea, with golden-yellow ground colour, Jasper, of rose-purple tints, several hybrids of Rossii, including Woodroffeæ, and a choice variety of Lambeauianum. On the other side of this house can be seen several of the best varieties of Odontoglossum crispum, and of which mention may be made of Starlight, crispum solum, and crispum Bryndir, the latter a very fine, large, white flower of thick texture. There are fine plants of the handsome Oda. Zenobia, the pretty Oda. Madeline, and the Roehampton variety of Oda. Joan, which is remarkable on account of its rich, dark coloration. One of the gems in this house is Od. Miguelito (Dora × Doris) recorded by Dr. Lacroze in 1918, and yielding large round flowers in which the segments are almost covered with rose-purple blotching. Od. Glorita is a distinct hybrid of Rossii descent, and Oda. Buenos Ayres has round petals of rose ground, and heavily blotched. At the end of this house is a

batch of Od. Edwardii hybrids, which are kept for the purpose of sowing Odontoglossum seed on the surface of the compost, where it germinates freely on account of the presence of suitable fungus.

At the time these notes were written a small house was entirely devoted to plants in flower, where, with a drier atmosphere, the blooms keep fresh for a longer period. They were being reserved for the R.H.S. Autumn Orchid Show, and made a georgeous display, the colours ranging from the purple-white of the albino Cattleyas, through rose and purple, to the dark reddish-purple of some Sophronitis crosses. At this season one did not expect to see many Odontoglossums, but there was a magnificent variety Od. crispum carrying an arching spike of fourteen white flowers. An attractive flower was the rich golden-yellow of Bc. Sofrano (Mrs. J. Leemann × C. iridescens), and, near by, a tall plant of Lc. Carmencita (C. aurea × Lc. luminosa), with wide buff-yellow flowers. Cattleya Saturn carried a couple of chalk-white flowers that showed evidence of the Gaskelliana alba and O'Brieniana alba used in its creation. An old Orchid, known as Cattleya Portia, with a spike of eight flowers, proved that, when well grown, this plant is still useful and possesses much decorative character.

The past summer has favoured the Cattleya section, and plants of C. aurea have given as many as three good flowers on a spike. An elegant novelty exists in Cattleya Lacrozæ (Adula × Hardyana), in which C. bicolor, contained in the former parent, has produced erect petals, and an elongated labellum of bright rich purple. A specially fine, large rose-coloured flower exists in Bc. Olympus var. Nena, given an Award of Merit, R.H.S., September 21st, 1920, and also in the Bryndir variety of Cattleya St. George there exists a plant of great beauty and one that obtained a similar award on October 23rd, 1917. Blc. Morna superba is represented by more than one specimen plant, and the flowers are not only of large size, but have the margin of the lip very prettily fringed. A number of paintings prove the high merit of the numerous gems in the Bryndir collection, and are always of use when the plants are not in flower. An instance can be given in Lc. Nena, the painting of which shows the extraordinary orange-red colour of this plant, and when it is mentioned that seven or eight of these blooms are produced on a spike some idea of the fine effect produced can be imagined.

Cattleya Mossiæ never possesses a robust constitution, aud the majority of the earlier imported plants have long since passed away. But Dr. Lacroze has nice plants of C. Mossiæ Arnoldiana, which was first flowered in 1884, and of C. Mossiæ Sea Foam, a charming variety formerly in the late Mr. J. G. Fowler's collection. The Bryndir variety of Lc. Thyone is remarkably distinct, and the large golden-apricot-coloured flower has a crimson band of colour round the apex of the expansive lip. The future

prosperity of this choice collection is well assured, and we have only to mention that during the past autumn no less than forty seed-pods have been gathered, everyone the result of careful work in selecting suitable parents, and on that account to be regarded as the first stage in the production of future prize-winning Orchids.

NATIVE NEW ENGLAND ORCHIDS.

A USEFUL pamphlet, bearing the title, "Notes on Native New England Orchids," has been written by Mr. Albert C. Burrage, President of the American Orchid Society. In the prefatory note it is stated that there are in the Orchid family over 400 genera containing probably about 15,000 species. They are divided into two classes, epiphytic and terrestrial. Epiphytic Orchids have the most varied forms, but are confined to the hot climates. In the temperate regions, such as the United States north of Florida, only terrestrial Orchids are found.

Mr. Burrage remarks that "the Orchids which grow in New England are thus wholly terrestrial and are confined to 14 genera and 48 species, which flower during the six months of the year from the latter part of April to the middle of October, the time for each variety varying with the latitude and elevation. Some are large and showy, others small and inconspicuous; some are highly coloured, others have little colour; some grow in swamps and bogs, some in dry uplands, some in shaded places, others in open spots."

In the list of Orchids native to New England, the accepted botanical name is followed by the common name, and the name of the person who first described it; also a brief description of the plant and flower, and the usual time of flowering. We learn that Cypripedium arietinum is one of the rarest native Orchids, and commonly known as the Ram's Head Lady's Slipper; the flowers are produced about May 9th. Cypripedium hirsutum, of which an excellent illustration is given, is regarded as the largest native Orchid. Goodyera decipiens, also called Menzies' Rattlesnake Plantain, is described as the largest of this group and confined to the northern woods. Habenaria ciliaris, the yellow-fringed Orchis, is the handsomest native Orchid, Listera cordata is said to be the smallest native Orchid, and Pogonia affinis the rarest. Orchis spectabilis is the earliest New England Orchid, and Spiranthes cernua, commonly known as the Nodding Ladies' Tresses, is said to be the latest.

AT a stated Meeting of the Massachusetts Horticultural Society held at Boston, U.S.A., Oct. 7th, 1921, Mr. Gurney Wilson was duly elected a Corresponding Member of the Society.

MASSACHUSETTS HORTICULTURAL SOCIETY.

ONE of the finest shows ever held in Boston, Mass., U.S.A., took place from Sept. 22nd to 27th inclusive. "While the exhibitions," states the *Florists' Exchange*, "by the Massachusetts Horticultural Society have, in late years, steadily gained in importance and perfection, and, while within the last two years the magnificent Orchid Show, the equally glorious Rose Show, and the never before attempted Exhibition of Wild Orchids, would lead one to believe that greater achievements were out of the question, yet the recent achievements demonstrated that Boston is the city *par excellence* so far as horticultural spirit and ability to carry to a successful outcome is concerned."

Mr. Albert C. Burrage, President of the American Orchid Society, had printed for free distribution an illustrated card dealing with the life history of Renanthera (Vanda) Lowii. The specimen exhibited was stated to have been collected in Borneo, then taken to Japan, and after a while to San Francisco, Los Angeles, Pasadena, and finally removed to Mr. Burrage's collection at Orchidvale two years ago, where it flowered for the first time this year. The President's group was 40ft. in length, and contained Brassocattleyas, Miltonias, Cypripediums, Odontoglossums, Oncidiums and numerous others. A Silver Medal was awarded to a specimen plant of Odontoglossum grande.

From the *Florists' Exchange* we learn that a specimen Dicksonia antarctica, 15ft. high, had its stem clothed with various Orchids. Mr. Clement Moore, New Jersey, was awarded a Gold Medal for a group of choice Cattleyas, among them being the grand Sophrocattleya A. C. Burrage. A similar award was given to Mr. E. B. Dane for a fine exhibit of Cypripediums. On a large table were placed the gems from Mr. Arthur N. Cooley's collection. A Gold Medal was awarded to Brassolæliocattleya The Baroness, and to mark the high culture of the Cattleyas, numbering about a hundred, a Gold Medal was given to Mr. Oliver Lines.

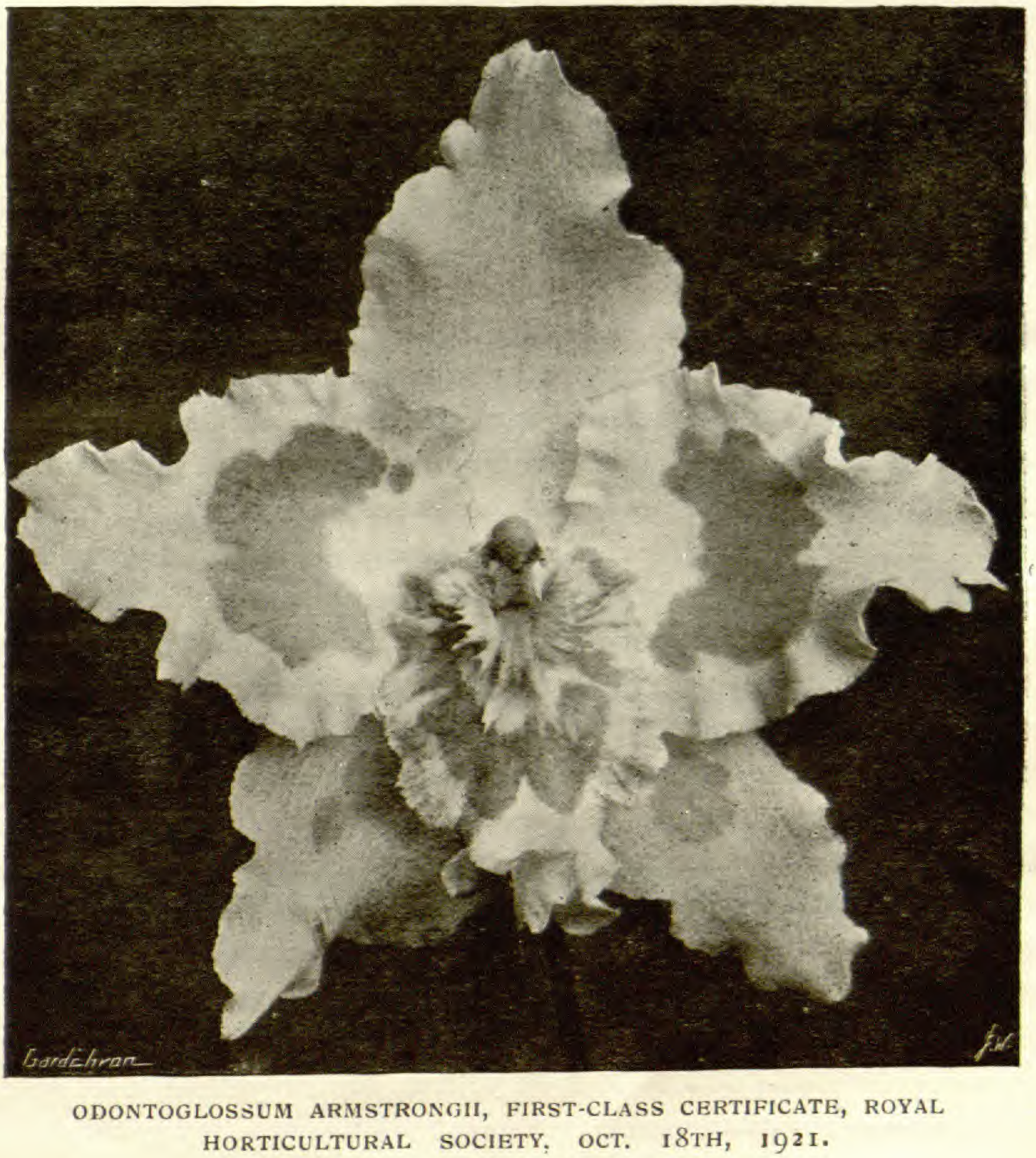
Mr. J. T. Butterworth staged a number of Odontoglossums, Oncidiums and Cypripediums, and a specimen plant of Cyp. Mrs. Butterworth with about a dozen flowers. Messrs. Julius Roehrs exhibited a number of choice Orchids, including some grand Cypripediums. In the small hall, Mr. Geo. E. Baldwin showed some fine Cattleyas, including C. Saturn alba, Lc. Linda, Lc. Henry Greenwood, numerous varieties of C. Fabia, as well as C. Kienastiana. This group was awarded a Gold Medal, and the Appleton Gold Medal was given to Cattleya St. George, a wonderful dark form.

Messrs. Lager & Hurrell showed two vases of cut flowers, one containing Vanda Miss Joaquim and Lycaste cruenta, the other various Cattleya hybrids. Mr. Jos. A. Manda exhibited 20 vases of cut Orchid flowers, and

Mr. Henry Steward had a 50ft. group in which were large plants of Oncidium flexuosum, each with six to a dozen large spikes of yellow flowers.

ODONTOGLOSSUM ARMSTRONGII.

THIS remarkable Odontoglossum was the centre of attraction at the R.H.S. Meeting held October 18th, 1921, when a First-class Certificate was awarded, the raisers being Messrs. Armstrong aud Brown.



ODONTOGLOSSUM ARMSTRONGII, FIRST-CLASS CERTIFICATE, ROYAL HORTICULTURAL SOCIETY, OCT. 18TH, 1921.

(Kindly lent by the "Gardeners' Chronicle.")

The reproduced photograph shows the exact size of the flower, as well as the design of the blotching, which is of lemon-yellow colour on the sepals and petals, and a deeper and brighter yellow on the expansive labellum. Around the edge of the labellum is an eye-brow-like line of faint yellow markings. The column is white and the anther cap yellowish. Varieties of O. crispum having yellow spots, termed xanthotic forms, have been

known for many years past, and several beautiful results may be seen in hybrids derived from them, although in no previous case did the system of spotting change to blotches. O. Armstrongii shows a great advance in this respect, and constitutes the finest example yet seen in this section, for large and definite yellow blotches on the petals take the place of the irregular spotting that occurs in its predecessors. We are indebted to the Editors of the *Gardeners' Chronicle* for their kindness in lending this block.

CATTLEYA HYBRIDS.

THE new edition of Sanders' List of Orchid Hybrids shows in a marked way the great increase that has taken place in recent years in the various hybrids. Taking the Cattleyas only, the List enumerates about 700 different crosses, and this does not include any of the Cattleya combinations, such as Læliocattleya and Brassocattleya, etc. Since the previous edition, which, with the Addenda, brought the records up to the end of 1916, about 110 new Cattleya hybrids have been recorded.

A rough analysis of the parentages of these 110 hybrids shows that C. Dowiana and C. aurea have taken a share in the making of no less than 68 of this total. No other species comes anywhere near this high figure. If we seek for the reason, it is found in the numerous splendid hybrids that have been produced in previous years by one or the other of these plants. The latest results show an even greater proportion, and doubtless there is a multitude of C. aurea hybrids fast approachiug the flowering stage that will be recorded within the next few years.

It is by no means easy to place these hybrids in any particular classification. Two sections, however, stand out prominently: one containiug the combination of C. aurea with the large purple species, and of which examples may be seen in Fabia, Hardyana, and Empress Frederick; the other comprising C. aurea in conjunction with the yellow flowering plants, as witnessed in Iris, Sibyl, and Venus. In the former section large flowers of bright purple tints are produced, while in the latter medium-sized flowers of yellow, bronze-yellow, and golden-yellow are mainly seen.

About twenty of the hybrids recorded since 1916 are the result of crossing albino varieties of species and hybrids. Noteworthy examples are C. Annette (chocoensis alba × Warscewiczii F. M. Beyrodt), C. Bronacha (Gaskelliana alba × Mrs. M. Peeters), C. Celia (Harrisoniana alba × Lady Veitch), C. May Queen (Astron × intertexta alba), C. Muriel (Mendelii alba × Dusseldorfei Undine), and C. Snowdrift (chocoensis alba × Dusseldorfei Undine).

CULTURAL NOTES.

By H. G. ALEXANDER, Orchid Grower to LT.-COL. SIR GEORGE HOLFORD, K.C.V.O.
WESTONBIRT.

SEASONABLE REMARKS.—December is the most sunless month of the year, for the days are the shortest. During the winter quarter, which we are about to enter, the principal difficulty we have to contend with in Orchid cultivation is the changeableness of our climate. Very wintry weather prevails over a large part of the kingdom at the time of writing, and unusually severe frost for so early a period in the season is being experienced in many districts. The changes in the weather occur so suddenly, that often there is little time to prepare for them, hence watchfulness is necessary for changes in the wind, cold rains and snowfalls, which lower the atmospheric temperature in glass houses more rapidly than sudden frosts. There ought always to be a good radiating surface in every Orchid house, to avoid that very serious evil of overheating the pipes during severe weather in order to maintain the desired temperature, for the well-being of the plants during winter, depends largely on the heating apparatus and careful stoking. There is little doubt but that in many Orchid houses the temperatures maintained in winter are higher than necessary, yet, while guarding against excess of fire-heat, it is equally foolish to employ too little artificial warmth. During winter more harm will often result from a stagnant atmosphere in mild weather, than from a lower temperature in severe weather, hence the absolute necessity of reasonably employing the heating apparatus at all times to circulate the air.

TEMPERATURES.—Last month I advised preparing for winter by reducing the temperatures in all the houses a few degrees by night, and also by day in the absence of sunheat. The winter night temperatures should be kept somewhat as follows:—Warmest divisions, 60 to 65 degrees; Cattleya or Intermediate houses, 55 to 60 degrees; Cool Intermediate houses, 54 to 58 degrees; Cool or Odontoglossum houses, 50 to 54 degrees; and during severe weather no harm will occur if the temperatures should fall a few degrees lower than even the minimum given. During the day time a rise of 5 to 10 degrees should be permitted, according to the outside weather conditions.

DRIP.—This is a common source of danger to Orchids, and at this season of the year it is most injurious; therefore every care should be taken to prevent it. Condensed moisture from the rafters will sometimes drip down into the compost, or worse still, into the hearts of the plants. In winter this water is very cold, and many a plant has been ruined by it. Drip does not show its effects upon any plant as soon as one would expect; in fact some plants may grow freely for a time, but eventually there is deterioration, if the plants are not actually killed. During winter all plants

should be kept at a reasonable distance from the glass, and be placed out of reach of draught from the top ventilators.

RESTING PERIOD.—The treatment of Orchids during this period involves even more care and thought than are required during the season of growth, and there are few matters in their cultivation that are more often misunderstood by the novice. Rest is not, perhaps, the exact term to use, for what is required is a gradual and natural cessation of growth, so far as an outward appearance goes, for a longer or shorter period, according to the habit of the plant. If all Orchids were alike in their needs, it would make the resting season a much less anxious time for the cultivator, but they are not; therefore the grower has always to be on the alert, and give to each plant the attention it needs during this state of comparative inactivity. When a number of Orchids varying much in their time and manner of resting are grown together in one house, it is impossible to arrive at a common method of treatment that will suit all alike. It becomes, however, necessary to adopt what one may term a compromise as regards temperature and atmospheric conditions, to which the plants are perforce obliged to be made to submit in the compartment at command for their cultivation. Independently of the necessity in the case of many Orchids for a proper resting period to ensure their satisfactory flowering, such rest is equally requsite to maintain their proper period of growth, hence the obligation to provide a cooler, drier atmosphere, and to afford water to the roots only in sufficent quantities to keep leaves, pseudo-bulbs, and roots in a healthy condition. All Orchids that require to be kept dry at the roots during their season of rest will be able to benefit by this to an extent depending upon the conditions under which they have been grown during the last and preceding seasons. If the leaves and the pseudo-bulbs are well developed and properly matured, especially the evergreen species, they are always better able to bear a lengthend period of drought without shrivelling to an extent that will injure the foliage. Plants of the Cattleya family are sometimes weakened when the rooting materials are allowed to dry excessively. Enough water should in all cases be supplied to the roots, although more than will prevent shrivelling of the pseudo-bulbs and foliage is injurious at this season. The same remarks apply to Dendrobiums, Oncidiums, and similar genera. Catasetums, Chysis, Cynoches and many other deciduous Orchids, if their bulbs are thoroughly ripened, seldom require water after the foliage has fallen, but should any plants appear to be shrivelling unduly, a good watering should be given, and no more, because if kept moist at the roots the flowers are never so freely produced. The evergreen distichous-leaved Orchids, such as Vanda, Saccolabium, Aërides and Phalænopsis require more moisture during the winter than the pseudo-bulbous kinds. Very little water is, however, needed by these during the

dull season. Cypripediums are never inactive at any time of the year, therefore to allow these plants to remain dry at the roots for any considerable length of time would prove injurious. On the other hand, excessive applications of water during the winter season are equally injurious. When the plants of the late autumn and winter flowering kinds have their flowers fully developed, the least quantity of water is then required, following up this treatment during the flowering period and for some weeks afterwards. A moist atmosphere must be maintained always, but care should be exercised to avoid a saturated condition when the plants are in bloom, and especially during the night, if the minimum reading is likely to be reached.

INSECT PESTS.—The principal work at the present time is the washing and cleansing of the plants for the eradication of insect pests. The leaves of the majority of Orchids are fully matured, and the cuticles comparatively tough, therefore the cleansing operation may be undertaken with little risk of injury. The exhausting effect of various parasites upon the plants are often not sufficiently considered by the novice. One of the worst insect pests of Orchids is a soft, white scale that conceals itself under the outer sheaths of the bulbs of Cattleyas and similar plants. The destruction and removal of this pest may be easily accomplished with the aid of one of the many safe insecticides that are now on the market. When a number of plants require cleansing the best plan is to prepare sufficient of the insecticide in a tub, or other convenient utensil, to form a bath, and immerse each plant head downward in the insecticide, well wetting the leaves and pseudo-bulbs to ensure the destruction of every pest. After withdrawing the plant, hold it over the tub to drain for a few seconds, and then place the pot on its side to drain dry. Following this bathing process each plant should be examined carefully and sponged, and where the pests are very numerous the outer sheaths of the pseudo-bulbs should be stripped off, and a pointed stick be used to remove the scales. Many other insects attack Orchids, including woodlice, snails, slugs and cockroaches, and the following methods are useful for capturing and destroying these pests. Woodlice, which cause much damage to the tender young roots, may be captured by placing potatoes cut in halves about the plants and on the compost as traps, examining these at night and early in the morning. The creatures are often disturbed by watering the plants, causing them to come to the surface of the compost, when they may be easily captured. Snails and slugs may be trapped by sliced carrots, potatoes, lettuce or cabbage leaves, saucers of bran, etc., being placed about the houses amongst the plants. With the aid of a lamp these traps should be examined at night, and the pests searched for diligently till they disappear. In the cool houses where slugs and snails are often most troublesome, any flower spikes may be protected as they are pushing forth by a band of cotton wool wound

around the base of the flower stalk. Penyester Magic Paste obtainable from any chemist or horticultural sundriesmen, is very effective in the destruction of cockroaches and crickets. Ants, which are sometimes very troublesome in Orchid houses, may be destroyed after first attracting them to sugar or treacle placed in patches about their haunts, and when they are feeding spraying them with a strong solution of nicotine insecticide.

AN AMATEUR'S EXPERIENCE.

By JOSEPHINE R. WALKER.

IN approaching this subject I should first like to pay tribute to Mr. Black, Mr. Alexander, and Mr. Barker, for the assistance derived from articles written by them; to Mr. Thrower, of Messrs. Sanders, and to Mr. J. Howes for their kindly advice. It is only because I am told we have attained a fair measure of success under conditions that are very difficult, and have many trying situations to contend with that seldom fall to the lot of the professional grower, that I thought our trials, troubles, failures—and successes, may be helpful to the amateurs.

When we moved in here, some nine years ago, we had a small collection of Orchids, my husband having been an enthusiast for some years, but the only accommodation was a conservatory on the side of the house. It stands 30 ft. high, 30 ft. long, and 15 ft. wide, facing due south, with a white tiled wall on the house side, a tiled floor, and containing some tons of rockery. It looked almost a hopeless proposition to tackle for Orchids, but we were determined to stick to them, so faced the task. When we cleared out all the rockery we found three rows of pipes round the sides, and in the centre a grating covering six coils, so we could get and maintain 60—65 degrees of heat. The boiler is in the cellar, and the conservatory opens from the dining room, both distinct advantages, especially in wet and wintry weather, as the plants are only touched by my husband, myself, and our maid, who in ten years has herself become something of an enthusiast, and takes charge when the family are away in the summer and odd times. She possesses quite a working knowledge.

We put staging round the outside and in the middle, three feet wide and covered with slates. We soon found we had some serious difficulties, according to the books. Firstly, the glare of the sunshine, which was very difficult to combat: some Odontoglossums soon showed their dislike of the conditions by dying, and when we have since tried to grow them we cannot persuade them to last for more than one season, so, much as we love them, they are off the list for the present. The Mexican Lælias revel in their new quarters. They are hung in the full glare of the sun, and this, together with the buoyant atmosphere—it is always "that" in the evening—seems to suit them. This year particularly, they have made magnificent bulbs. The

Cypripediums we tried to shade by various methods of curtains inside, which we drew across when the full glare was on.

The conservatory has a large lantern roof, and we found in the autumn a lot of condensation which caused drip, but as this was usually in well defined lines and places we got over the trouble by arranging the plants so that they escaped. A large beech tree shades one corner, and when the sun comes about S.S.W. there is a little grateful shade in that part of the house, and here Cymbidium Tracyanum, C. Lowianum and C. Sanderæ, seem to revel and root and grow like weeds, giving many magnificent spikes of bloom. The Dendrobiums did not appear to like the conditions, and only existed. But I am not sure that my husband did not add to their troubles. He has read somewhere, at some time, that they require drying off, and this he interprets by hanging them in the lantern roof when they finished their growth and until they are flabby and shrivelled. When they bloom in the spring he looks at them and wonders why they are so poor. However, he has now reformed, but more of this anon. I forgot to say it is very seldom during the year that he leaves home without an Orchid in his button-hole.

Cœlogyne cristata also seems to have resented the move here. Maybe because we have not enough heat in the growing season, but more probably because it has so often been disturbed and pulled to pieces. It is now being given a rest until the bulbs are piled one on top of the other, in the hope that better results will be produced.

Most of the plants now in the collection, about 250, have been bought during the last few years at the dispersal of various collections, and in most cases they have been in a parlous state. On arrival, we invariably shake them out of the pots, and give them a thorough washing and cleaning. They are then potted firmly in the smallest pot possible. We bought a lot of Læliocattleyas two years ago that had been badly neglected, and treated them in this way, many being also divided. They are now a magnificent lot and have all made excellent bulbs and flowered.

We have some woods quite close and where, in the autumn, we collect the bracken roots. In this material, which is very like Orchid peat, they have flourished. Some of the Lælias which came into our possession about four years ago were very, very sad, but we adopted the same methods, and this year the bulbs are magnificent. One bears a label stating: "Lælia anceps Schroderæ, part of the original plant brought from Mexico by Col. Godseff, 26/3/86, and sold by Messrs. Sanders to Mr. G. F. Smith, Studley House, 4/2/88." Does anyone know this plant? I am sure it deserves a special medal for having so long survived all the vicissitudes of this life. This year it has magnificent bulbs and spikes; we are looking forward to seeing it bloom and hope it is a reward for four years' care and attention.

THE LATE ALDERMAN WM. BOLTON.

WE much regret to record the death of Alderman Wm. Bolton, which took place at his residence, Mill Bank, Warrington, Lancs., on Friday, November 18th. Born in 1852, he commenced business life by joining the reporting staff of "The Guardian," and subsequently became sub-editor of "The Farmer." His municipal career extended for a period of nearly forty years, and it was his custom whenever as a Magistrate he attended thc Court, to present each member of the Bench and the Clerk

THE LATE ALDERMAN WILLIAM BOLTON.

with an Orchid bloom, whilst when he acted as Mayor during the years 1903-6, each member of the Council, officials and the press received a similar gift at each meeting of the Town Council.

Wm. Bolton's connection with Orchids goes back to the year 1869, when he received from his uncle plants of Dendrobium nobile and Cypripedium insigne. As time went on, his interest increased, and about the year 1893, he dispatched Mr. Kromer to Brazil and Mr. Jensen to Colombia for Orchid collecting. Almost all the popular genera have been cultivated by

CYPRIPEDIUM INSIGNE SANDERÆ FLOWERING IN THE COLLECTION OF THE LATE ALDERMAN WILLIAM BOLTON, WARRINGTON, LANCS.

him in his extensive glass-houses at Warrington, and the plants can only be numbered by tens of thousands. Cypripedium Boltonii has achieved world-wide reputation, and will long serve to hold this expert's name in remembrance.

It was the custom of Alderman Bolton to send extensive gifts of Orchid blooms to the late King Edward VII, Queen Alexandra, and also to King George and Queen Mary, on the occasion of various anniversaries. Among other notable persons who received similar gifts were ex-King Manoel, he late Right Hon. Jos. Chamberlain, and the late President Roosevelt.

Alderman Bolton who for many years was a member and regular attendant of the R.H.S. Orchid Committee, was also a connoisseur and collector on a large scale of medals, coins, cameos, precious stones, pictures and old china.

CORRESPONDENCE.

THE AMATEUR'S PAGE.—I hope you will continue the Amateur's Page and "Confusing the Amateur Grower." I have been doing wrong with the watering-pot, and this article has enlightened me already. Of course, I do not mean to convey that I have been giving the plants the same amount of water now as I did in the summer. Generally speaking, my plants look excellent for the East End of London, and only a few hundred yards from two railway lines. With Cattleya aurea and Lc. Rubens I have had two lovely flowers on each, and on Odontoglossum crispum a nice spray of sixteen flowers, all out at once and perfect. I have also two Cymbidiums in the picture of health, with bulbs as large as a good sized duck's egg, and now pushing out some strong flower spikes. I have about eighty Cypripediums, the majority in bud. My greenhouse is 20 feet long and 9 feet wide, built by myself, and the heating apparatus is my own fitting.—G. MILNE, Forest Gate, London, E.

ARTICLES FOR AMATEURS.—May I offer my heartiest congratulations on your new departure in giving articles for amateurs. Mr. Alexander is always most interesting and helpful, but what amateurs specially want is that given by Mr. Black in his most luminous and valuable article. I sincerely trust similar articles will be continued month by month, and hope that, amongst others, the following subjects will be dealt with, for I know that they are most difficult problems for amateurs:—How to know that a plant wants watering. Proper methods of potting and composts. The atmosphere, damping down, etc. When to use the top and bottom ventilators. Spraying overhead. How to *prevent* thrip and other pests. A good gardener, in my judgment, is the man who plays the part of a sanitary inspector, whose sole duty is to prevent. He would soon lose his

job if he started talking about how to cure. I have just lost a very fine spike of Odontoglossum crispum through thrip, although every plant in the house had been dipped in insecticide 14 days ago, and I thought the house was perfectly clean.—CHAS. N. KEMP, Grove Park, Redland, Bristol.

THE AMATEUR'S SIDE OF CULTIVATION.—I have often wondered why the amateur's side of Orchid growing has never been handled by an amateur, because I often think that Mr. Black, Mr. Alexander, and Mr. Barker have never had to grow the plants under the conditions of say, myself—in a conservatory 30 feet high, with a lantern roof and a white tiled wall on the inside, facing due south, without shading of any description, and grown without the aid of osmunda or any other imported fibres. And, further, the collection is mostly comprised of plants that have been bought cheaply at various sales, often at death's door, and requiring to be nursed back to health and vigour. Among the Cypripediums there is a plant of Leeanum Clinkaberryanum in a 6-inch pot, showing thirteen buds, and Cymbidium Tracyanum with two spikes of seventeen flowers each; last year it carried four of eighteen flowers each. These plants are never touched, except by my husband, myself, and the maid.—JOSEPHINE R. WALKER, Garforth, Leeds.

THE AMATEUR'S PAGE.

BASKETS AND PANS.—"One frequently reads that certain plants are best cultivated in baskets and pans, but I am at a loss to know which of the two to select?"

Baskets are generally used for plants that produce a pendulous raceme from their base. Stanhopeas are good examples. No hard crocks should be used, merely some rough fibre or bracken roots to cover the bottom rails, and above this the usual compost of fibre and moss. The flower spikes will then have nothing to hinder their progress. Phalænopses are often grown successfully in baskets, for the roots find ample means of clinging to the wooden rails, and thus obtaining the plentiful supply of air and moisture which appears so essential to their welfare. Earthenware pans prove most useful in accommodating the dwarf-growing kinds, such as Sophronitis grandiflora and Odontoglossum Rossii, also for those producing pendulous spikes after the habit of the well-known Odontoglossum citrosmum. These three plants do not push their spikes directly downwards through the compost, as is the case with Stanhopeas, but they produce spikes above the rim of the pan. In O. citrosmum the spike gradually arches over, and finally assumes a pendulous nature.

Cattleya Bulbs Rotting.—"Several of my Cattleyas are showing signs of rotting at the top of the bulb soon after the flowers are cut, and my belief is that too much water has been applied."

The trouble is due to portions of the old flower-sheath being left, and this allows water to accumulate and cause the damage experienced. As soon as the flowers are removed, the remainder of the spike should be cut away on a level with the top of the bulb. The sheath should be entirely removed, and this is best done by carefully pulling away each half separately. Use a small sharp knife, and on no account damage the bulb or leaf. Less water will be required at the roots when flowering is over, and the plant is not in active growth.

R.H.S. AUTUMN ORCHID SHOW.

November 1st, 1921.

THERE were three entries for the Large Challenge Cup, which was awarded to Baron Bruno Schröder (gr. Mr. J. E. Shill), for a wonderful group of specimen plants; finer examples of cultivation have never before been exhibited in such quantity. In the centre was a grand plant of Lc. Tiresias (C. Bowringiana × Lc. elegans), carrying six spikes with a total of over 150 flowers, and three smaller plants equally well-flowered. Along the back portion were a dozen exceptionally fine plants of Cypripedium Maudiæ, the best carrying no less than 25 flowers, the average being 20. Of Cyp. insigne Sanderæ there were grand plants with about eight flowers on each, and equally fine specimens of insigne Harefield Hall. An attraction was Lc. Schröderæ, The Dell var., with extra large sepals and petals of thick, cream-white substance, and another speciality was seen in Blc. Amber var. Dorothy, of fine shape and golden-yellow colour. There were also magnificent plants of Lc. Ivanhoe.

Sir Jeremiah Colman, Bart. (gr. Mr. J. Collier), was awarded a Gold Medal for a highly interesting collection of rare species and hybrids. There were several fine examples of Dendrobiam Phalænopsis, including albinos, as well as Lælia pumila and L. Dayana varieties. Blue-tinted were represented by C. Portia cœrulea, and white ones by C. Lady Veitch and albino forms of C. labiata. The Brassavola section and Sophronitis hybrids were well represented, and the Gatton Park varieties of various Cattleya hybrids all carried good spikes. Angulocaste Cooperi and Trichosma suavis were in fine condition.

Pantia Ralli, Esq. (gr. Mr. S. Farnes) received a Silver-gilt Flora Medal for one of the most attractive groups that has been seen. The ground work was composed of well-flowered plants of Cyp. insigne Sanderæ, and above them 17 excellent plants of Vanda cœrulea, the golden-yellow of the former and the blue of the latter making a striking contrast. At each end was a group of Cattleyas, including fine varieties of Fabia, Linda, illustris and Lc. Schröderæ with a spike of four flowers. The rare Vanda Sanderiana and a fine variety of Lc. luminosa aurea were other points of attraction.

For the Small Challenge Cup there were also three entries, the winner being J. J. Joicey, Esq. (gr. Mr. J. Mackay), who staged many superb hybrids, one of which obtained the only First-class Certificate of the day, this being Bc. Prince of Wales. Blc. Joiceyi carried large golden-buff flowers, Slc. Joseph Chamberlain bore a couple of rose-pink flowers with a crimson lip, Lc. Carmencita had three orange-yellow blooms, and there were also C. Thora elegans, and Lc. witleyensis, yellow with effective crimson band to the lip. Among the Cypripediums were fine examples of Dreadnought and Elatior, while novelties were seen in Odontonia Thisbe, white, with reddish markings on the broad lip.

Dr. Miguel Lacroze (gr. Mr. Taylor) exhibited a very attractive group, which was given a Silver-gilt Flora Medal. In the centre were three fine examples of Bc. Penelope, and near by Bc. Sofrano, with golden-yellow flowers, also Bc. Ilene, of pleasing rose-purple tints. A fine example of C. Cantaurie, as well as Slc. Roehampton, stood out prominently, and there were good plants of other fine Cattleyas, Dendrobiums, and attractive Odontoglossums.

H. T. Pitt, Esq. (gr. Mr. Thurgood), received a Silver-gilt Grenfell Medal for an interesting exhibit containing a specimen Cattleya Portia, the new Lc. Renown (Lc. St. Gothard × C. Clothoe), with a large rose-purple flower, having an unusually large lip. Also the rare Angræcum Leonis, numerous Cypripediums, many choice Cattleyas, pretty Odontoglossums, including Od. Lady Veitch, and good Odontiodas.

Messrs. Charlesworth & Co. were awarded the Gold Medal for the best Trade exhibit, which comprised an extensive exhibit of exceptionally fine plants. These included Lc. St. Gothard, St. George, Schroderæ and Miranda. Of the many elegant Brassavolas, one of the best was Bc. Sofrano var. Renown, of excellent formation, yellow, with a slight green tinge. Novelties included Odontonia Thais (M. Bleuana × O. Aglaon), sepals and petals with rose-purple markings, the lip brownish yellow, and Odontonia Merope (M. Bleuana × O. illustrissimum) equally pretty. In the centre were many superb examples of Dendrobium Phalænopsis, and in the front row the curious Dendrobium Cœlogyne, Spathoglottis kewensis, Phalænopsis Esmeralda, and many elegant Odontoglossums. Miltonias were well represented by the pretty M. Venus, Cœlogyne by C. Mooreana, and Læliocattleyas by a remarkably fine variety of Lc. General Maude.

Messrs. Armstrong & Brown were awarded a Silver-gilt Grenfell Medal for an exhibit comprising a choice selection of autumn-flowering Cattleyas, including C. Fabia alba, C. Armstrongiæ lilacina, C. Venus Orchidhurst variety, and Lc. Honoria with a spike of four intense purple flowers. Among the species were Cattleya Harrisoniana alba, C. labiata Mrs. E. Ashworth, and the rare L. pumila alba. In the centre was Cymbidium

Hanburyanum, and around it elegant Cypripediums, including C. Christopher var. Grand Duke Nicholas, C. Mad. Fevrier, and robust plants of Cyp. Maudiæ. Od. The Prince (Colossus × Doris) carried a handsome flower, and there were fine spikes of the rare Cymbidium erythrostylum and a new albino Cattleya.

Messrs. J. & A. McBean received a Silver-gilt Grenfell Medal for an excellent group containing several richly coloured varieties of Cattleya Fabiata, bright forms of C. Hardyana, the handsome C. Abekeniæ, with a spike of three flowers, dark forms of Lc. Colmaniana, and the attractive Thora. An elegant item of coloration was seen in Oncidioda Cooksoniæ, and there were distinct Odontoglossums in Jasper and other hybrids of Harryanum. A fine example of cultivation existed in Cochlioda vulcanica, with a spike of over 40 flowers, and another in Dendrobium Deari. Albino Cattleyas were well represented in C. labiata alba and C. Bellona alba.

Messrs. Sanders staged an attractive exhibit, for which a Silver-gilt Grenfell Medal was awarded. Conspicuous plants were Odontoglossum Triomphe de St. Andre, with a spike of 13 blotched flowers, O. amabile Perseus, with 8 handsome blooms, and O. Alexandra. In the centre was a fine plant of Lc. Fulva carrying 11 buff-yellow flowers, and around it special varieties of Cattleya Venus, C. Hardyana, the choice Lc. Britannia alba, Lc. Carmencita, and C. Ariel cœrulea, a specimen with bluish-tinted flowers. There were good examples of Vanda cœrulea, the elegant Cœlogyne Mooreana, C. brunnea, C. speciosa alba, and various Brassavola hybrids, of which the best were Bc. Enid-Hye and Bc. Mrs. J. Leemann.

Messrs. Stuart Low & Co. obtained a Silver-gilt Grenfell Medal for an extensive exhibit in which were several albino forms of Cattleya labiata, that known as Harefield variety being the best. The richly-coloured Cattleya Adula Glebé variety, and Blc. Everest, with a large well-formed flower, were much admired, as also were several examples of the fine Phalænopsis Rimestadiana. Golden colour was added by the attractive Lc. Golden Wren, and by some Indian Dendrobiums. The trigeneric Lowiara insignis had reddish blooms, and similar tinted flowers were seen in various fine hybrids of Sophronitis.

Messrs. J. Cypher & Sons received a Silver Flora Medal for an interesting group, the centre being composed of three fine examples of Dendrochilum Cobbianum, with numerous spikes. A specimen of Cirrhopetalum Medusæ with six many-flowered spikes, Brassavola lineata, several quaint Masdevallias and Maxillarias, interesting Oncidiums, and a representative collection of Cypripediums were seen to advantage. The white Cattleya Astron and fine forms of C. Portia were also included.

Mr. Harry Dixon was awarded a Silver Flora Medal for a pleasing exhibit containing a robust plant of Cymbidium Tracyanum, a well-flowered

plant of Dendrobium chrysanthum, several Cypripediums of merit, including Maudiae and insigne Sanderæ. Laeliocattleyas were represented by the Spencer Park variety of Linda with a spike of three rose-pink flowers, and a fine example of Luegae. Epidendrum vitellinum autumnale was also staged.

Messrs. Hassall & Co. were awarded a Silver Banksian Medal for a collection of choice Cypripediums, including Shogun, Dreadnought, Rossettii, Thalia and Royal Sovereign, all of which were in excellent condition. The central area was made up of several specially good Cattleyas, such as Fabia alba, Bryan alba, Lc. Schröderæ, with white sepals and petals, Lc. Delhi and a fine Blc. Muriel, with a large flower of soft rose-pink colour. Other attractions were Blc. Thyone, Blc. The Baroness, C. Tityus and C. Venus, all well above the average type and admirably cultivated.

Messrs. Mansell & Hatcher received a Silver Banksian Medal for a neat exhibit containing Miltonia Bleuana, the scarce Oncidium bicallosum, the pretty Lc. Helice and Lc. Invincible. Mention may be made of Cattleya Hardysius, with a spike of three flowers, having white sepals and petals, C. Mantinii, richly coloured, C. Fabia alba, and a fine variety of C. amabilis.

Sir Otto Beit, K.C.M.G., Welwyn, Herts., exhibited a specimen Cattleya Bowringiana, with eight many flowered spikes.

Sir Herbert S. Leon, Bart., Bletchley Park, staged Cattleya Lady Leon, and the Bletchley Park variety of Cattleya Moira.

FIRST-CLASS CERTIFICATE.

Brassocattleya Prince of Wales (Bc. Ilene × C. Octave Doin), from J. J. Joicey, Esq. The Hill, Witley, Surrey. A bold flower of large dimension and soft rose-purple colour, the expansive lip with varying shades of violet-purple and lined with gold in the centre.

AWARDS OF MERIT.

Cattleya Pittportia var. Lady Leon (Portia × Mrs. Pitt), from Sir Herbert S. Leon, Bletchley Park.—A pleasing hybrid and distinct in character, bearing many magenta-rose flowers of medium size, the central area of the lip lighter in colour.

Cypripedium Lady Leon (Dowleri × Honoriæ), from Sir H. S. Leon (gr. Mr. Field). Of excellent formation, the yellowish segments prettily spotted with purple.

Læliocattleya Athene var. Our Prince (callistoglossa × St. Gothard), from Messrs. Charlesworth & Co.—This carried three large flowers with wide segments, and bright rose-purple in colour.

Odontonia Thais (M. Bleuana × O. Aglaon), from Messrs. Charlesworth & Co.—A handsome result in which the white ground is most effectively marked with rose-purple blotching.

November 15th, 1921.

Members of the Committee present:—Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Rev. J. Crombleholme, Messrs. Jas. O'Brien (hon. sec.), F. J. Hanbury, E. R. Ashton, J. Wilson Potter, Pantia Ralli, C. H. Curtis, Gurney Wilson, F. K. Sander, S. W. Flory and W. J. Kaye.

Owing to the spell of wintry weather only a few Orchids were exhibited.

FIRST-CLASS CERTIFICATES.

Vanda cœrulea var. Bodnant Rose, from Lady Aberconway, Bodnant, Tal-y-Cafn, North Wales (gr. Mr. F. C. Puddle).—One of the few distinct variations in colour that have occurred in this species. The healthy plant carried a spike of five medium-sized flowers, which are very prettily mottled and tinged with rose-pink, the labellum entirely suffused with similar colour.

AWARD OF MERIT.

Sophrocattleya Dorea, Low's var. (C. Dowiana × Sc. Doris), from Messrs. Stuart Low & Co.—One of the best of the Sophronitis hybrids, the whole flower being effectively tinged with varying shades of orange-red, the broad labellum having golden buff veining on the central area and throat.

GROUP.

The Rev. J. Crombleholme, St. Mary's, Clayton-le-Moors, Accrington, exhibited a group of 18 well-grown plants of Cypripedium Arthurianum, St. Mary's variety, and bearing a total of 58 flowers. All the plants had been propagated from one selected variety that was considered the best out of a batch of seedlings raised by crossing C. insigne Sanderæ with C. Fairrieanum. Although not albinos, the flowers were of lighter coloration than usually seen in the typical insigne cross of Arthurianum.

PRELIMINARY COMMENDATION.

Odontoglossum Prince of Wales (Lambardeanum × Perfection), from Messrs. Armstrong and Brown.—A flower of excellent formation, the segments having chocolate blotching, and the apex of the lip white.

MATERIALS FOR NEXT SEASON'S POTTING.—An ample supply of all rooting materials should be obtained in good time to be in readiness for the work of repotting in the New Year. Sphagnum-moss should be obtained when the weather is open, and should be picked over, stored, and spread thinly on a boarded floor, keeping it turned until it is quite dry. If a good supply of clean pots and pans, crocks, charcoal etc., and all materials connected with the work of potting is got ready in winter, the work of the grower will be facilitated in the busy season, which soon arrives after the turn of the days.—H. G. ALEXANDER.

MANCHESTER ORCHID SOCIETY.

October 6th, 1921.

MEMBERS of the Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, Dr. F. Bedford, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Cypher, A. G. Ellwood, J. Evans, W. G. Giles, Dr. R. N. Hartley, J. Howes, A. Keeling, D. McLeod, J. McNab, W. Mansell, E. Tack, E. W. Thompson, and H. Arthur (Secretary).

A large Silver-gilt Medal was awarded to S. Gratrix, Esq., for a group of Cattleyas and Cypripediums; a Silver-gilt Medal to A. Hanmer, Esq., for an exhibit of Cattleyas and Læliocattleyas; a large Silver Medal to Mrs. Bruce and Miss Wrigley for a group of Cattleyas in variety; a Silver Medal to the Rev. J. Crombleholme for a group of Cypripediums; a Silver-gilt Medal to Messrs. Mansell & Hatcher; and a Silver Medal to Messrs. Cypher & Sons.

FIRST-CLASS CERTIFICATES.

Cattleya Joyce Hanmer, Lc. Soulange Edgemoor var., Lc. Gathaurea Edgemoor var., Lc. Mrs. Hanmer, Lc. Pyramus, Lc. Corinna magnifica, and Cyp. Mary Gratrix var. Edgemoor. From A. Hanmer, Esq.

Cattleya Helidor West Point var., Bc. Nellie Sladden, Bc. Sofrano var. Prince of Orange, and Od. Henry VIII. From S. Gratrix, Esq.

Cattleya Snowdrop var. Helicon, C. Dionysius alba, and Od. crispum Beta. From P. Smith, Esq.

Cypripedium Bedfordiæ and Anguloa Bedfordii. From Dr. F. Bedford.

Cattleya Warscewiczii Boltonii. From Mrs. Bruce and Miss Wrigley.

AWARDS OF MERIT.

Bc. Rosalind and Lc. Brunette. From Messrs. Mansell & Hatcher.

Bc. Maud Briggs and Cyp. Hilda Walker. From Mrs. Bruce and Miss Wrigley.

Cypripedium purpuratum Dovercourt var. From Dr. F. Bedford.

AWARD OF APPRECIATION—FIRST-CLASS.

Slc. Joyce Hanmer. From A. Hanmer, Esq.

CULTURAL CERTIFICATES.

Mr. W. G. Giles, for Cattleya Hardyana alba and Cyp. Mary Gratrix.

Mr. A. Burns, for Cattleya Portia.

Mr. J. Holmes, for Odontoglossum grande.

October 20th, 1921.

Members of the Committee present: Rev. J. Crombleholme (in the chair), Mrs. Slingsby, Messrs. R. Ashworth, B. J. Beckton, J. Birchenall, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, W. G. Giles, A. Hanmer, Dr. R. N. Hartley, J. Howes, A. Keeling,

W. Mansell, D. McLeod, Dr. F. T. Paul, E. W. Thompson, and H. Arthur (Secretary).

Silver-gilt Medals were awarded to S. Gratrix, Esq., for a group of Cattleyas and Cypripediums, and to A. Hanmer, Esq., for Cattleyas and Læliocattleyas; a large Silver Medal was granted to Mrs. Bruce and Miss Wrigley for a group of Epidendrum vitellinum; a Silver Medal to the Rev. J. Crombleholme for Cypripediums, principally home-raised; a large Silver Medal to Messrs. Mansell & Hatcher; and a Silver Medal to Messrs. J. Cypher & Sons.

FIRST-CLASS CERTIFICATES.

Bc. Ilene The Knowle var., Cattleya Eleanore var. Enchantress, Lc. Anita, Lc. Ivanhoe var. Mrs. Hanmer, Lc. Salonica magnifica, Bc. Pallas var. Joyce Hanmer, Cyp. Rossettii var. Edgemoor, and Cyp. Joyce Hanmer. From A. Hanmer, Esq.

Blc. Golden Crown var. Haddon House, Odm. Italie, and Cyp. Purity var. albo-purpureum. From P. Smith, Esq.

Slc. His Majesty, and Sc. Flamingo. From S. Gratrix, Esq.

AWARDS OF MERIT.

Cattleya Dupreana alba var. Unique, Cyp. Actæus Colossus, and Cyp. Temeraire. From S. Gratrix, Esq.

Slc. Ruby, Lc. Arabis, and Cattleya Hardysius. From Messrs Mansell & Hatcher.

Cattleya Elfin. From A. Francois, Esq.

Lc. Ivanhoe var. Othello. From Capt. W. Horridge.

AWARD OF APPRECIATION—FIRST-CLASS.

Slc. Pink Pearl. From Messrs. Mansell & Hatcher.

CULTURAL CERTIFICATES.

Mrs. Slingsby, for Cypripedium A. de Lairesse.

Mr. A. Burns, for Epidendrum vitellinum autumnale.

Mr. A. Coningsby, for Dendrobium Goldiei.

Mr. W. G. Giles, for Cattleya Eleanore var. Enchantress.

Mr. J. Howes, for Odontoglossum crispum Roma.

MILTONIA VEXILLARIA.—This species and its hybrids needs very careful treatment in the matter of root watering during the winter. If the plants are kept in too warm and humid an atmosphere, the growth made will be soft and flimsy, and prove disappointing when the flowering season comes round. A suitable position can usually be found for such plants at the cool end of the Cattleya or intermediate house, staging them well up to the light. In their present stage moisture at the root must be cautiously afforded, as only sufficient is necessary to keep the pseudo-bulbs from shrivelling, and the foliage healthy.—H. G. ALEXANDER.

INDEX.

ACORIDIUM, 51.
Aërides japonicum, 36.
Agrostophyllum species, 138.
Amateur's page, 142.
Ancistrochilus Thomsonianus, 137.
Angræcum falcatum, 36.
Angulocaste Bievreana, 33 ; Cooperi, 122.
Arran, natural hybrids from, 131.
Arundina bambusifolia, 34, 185.
Australian Orchids, 57.

BASKETS, history of, 89.
Baskets and pans, 185.
Bletia hyacinthina, 36.
Blocks, cultivation on wood, 113, 141.
Bollea Lalindei, 104.
Bonatea antennifera, 58.
Books, early Orchid, 130.
Brassia Lawrenceana, 114 ; longissima, 114.
Brassocattleya Gatton Snowflake, 121 ; Mrs. J. Leeman, 24 ; Mrs. Pitt, 120 ; Prince of Wales, 189 ; Sofrano, 155 ; speciosa var. Lady Colman, 96.
Brassolæliocattleya Cissie, 120 ; Golden Crown, 155 ; maculata aurea, 126 ; Jupiter, 30 ; J. var. Nippon, 24 ; J. var. Zeus, 25 ; The Baroness, Fasey's var., 120.
British Orchids, 154.
Bromheadia Findlaysoniana, 152.
Bryndir collection, 169.
Bulbils, propagating by, 112.
Bulbophyllum Dearei, 109 ; macranthum, 44 ; virescens, 104.

CALADENIA Doutchæ, 88.
Caladenias, 57, 58.
Calanthe veratrifolia, 36 ; Calanthes, culture of, 16, 150.
Caleana nigrita, 57.
Cape Orchids, 112.
Catasetum fimbriatum, 70 ; Catasetums, culture of, 54.
Cattleya albinos, 154 ; culture, 33 ; Elfin, 156 ; Fabia, 157 ; Falco, 94 ; Gertrude Hollington, 154 ; hybrids, 176 ; Iris, 98 ; Jacquenetta, 27 ; labiata alba, 8 ; Maggie Raphael alba, 123 ; Martella, 120 ; Monarch brugensis, 121 ; Olympus, 28 ; Orange Gem, 61 ; Picotee, 120 ; Pittportia var.
Cattleya albinos (*continued*)—
Lady Leon, 189 ; Prince Shimadzu, 124 ; Snowflake, 27 ; Suzanne Hye de Crom, 123 ; Trianæ, 4 ; Venus, 98 ; Warscewiczii rochellensis, 151.
Cattleyas, culture of, 149.
Ceylonese Orchids, 9.
Challenge Cups, 22, 42
Charlesworthara nobilis, 121.
Chelsea Show, 3, 24.
Cirrhopetalum miniatum, 144.
Cleisostoma ionosma, 36.
Cœlogyne bracteatum, 109 ; lamellata, 100 ; pandurata, colour of, 52.
Cœlogynes, culture of, 53, 88, 150.
Confusing the amateur Orchid grower, 146.
Correspondence, 184.
Crocking pots, 142.
Crombleholme, Rev. J., 162.
Cycnoches, culture of, 54.
Cymbidium Alexanderi giganteum, 122 ; Dragon Fly, 96 ; Huttoni, 43 ; erythrostylum, 58 ; Excelsior, 122 ; exported, 103 ; lancifolium, 36 ; Landrail, 96 ; Martin, 121 ; pumilum, 36 ; Simonsianum, 36.
Cypripedium Bacchus, 120 ; Bedfordiæ, 157, 162 ; Enchantress, 59 ; bellatulum, 82 ; Forest King, 95 ; Lady Leon, 189 ; Memoria F. M. Ogilvie, 121 ; M.F.M.O. Chardwar var., 95 ; Minos, 166 ; not flowering, 143 ; rotting, 142 ; Stonei platytænium, 65 ; Warneri, 120.
Cypripediums, culture of, 54.
Cultural Notes, 13, 53, 86, 117, 149, 177.

DENDROBIUM aggregatum, 102 ; amœnum, 67 ; Aphrodite, 136 ; Butterfly, Low's var., 121 ; calaniforme, 23 ; capillipes, 102 ; crumenatum, 67 ; cucumerinum, 161 ; cymbidioides, 80 ; Dalhousieanum, 101 ; D. luteum, 2 ; Everardii, 23 ; Gatton Sunray, 30 ; gracicaulis, 67 ; Loddigesii, 67 ; macrophyllum, 67 ; malaitense, 23 ; Model, the Dell var., 96 ; moniliforme, 67 ; nobile formosana, 67 ; n. Sir F. W. Moore, 121 ; nodatum, 136 ; Phalænopsis, 144 ; pulchellum, 101 ; suavissimum, 32 ; speciosum nitidum, 123 ; superbum, 115 ; teretifolium, 160 ; tosaense, 67 ; undulatum, 67 ; vitiense, 23 ; Wardianum, 119.

Dendrobiums, culture of, 118.
Dendrochilum, the genus, 51.
Disa Telipogonis, 32.
Dispersal of Orchid seed, 40.
Dissociation of specific characters, 44.
Dunlop, the late S. Y., 70.

EASILY-GROWN Orchids, 138.
Epidendrum Pseudepidendrum, 102.
Epidendrums, culture of, 14, 150.
Epipactis latifolia, 110 ; Muelleri, 97 ; viridiflora, 85.
Eria luchuensis, 67.
Exported established Orchids, 41, 103, 162.

FUNGUS, 17.

GLASGOW Orchid collections, 65.
Gomesa scandens, 104.
Goodyera pubescens, 105.
Grammatophyllum speciosum, 83, 98.
Gymnadenia conopsea × Orchis ericetorum, 131 ; G. c. × O. purpurella, 132.

HÆMARIA discolour, pollination of, 140.
Holland House Show, 60.
Hortus Boissierianus, 34.

INSECT pests, 14, 179.

LÆLIA anceps, culture of, 150.
Lælia Dayana, 116.
Læliocattleya Allamanda, 124 ; Anconda, 28 ; Athene var. Our Prince, 189 ; Ayesha, 59 ; Canary, 124 ; Champion, 25 ; Copper King, 156 ; Enid alba, var. Kathleen, 122 ; Eunice alba, var. Constance, 122 ; Excelsior the Globe, 29 ; Fulva, 120 ; General Maude, 77, 129 ; G. M. var. rubens, 77, 93 ; Golden Glow, 93 ; H. T. Pitt, Fasey's var., 123 ; Imperatrix Regina, 25 ; Ivanhoe, the Dell var., 157 ; Kadina, 98 ; Lady M. Buller, 22 ; Minos, 68 ; Momus Bryndir var., 120 ; Mrs. W. Pemberton magnifica, 30 ; Nancy, 66 ; Orange Blossom, 96 ; Petrograd, Bletchley Park var., 122 ; Sargon, 124 ; Schröderæ var. Conqueror, 95 ; gloriosa, 95 ; Soulange, Ralli's var., 60 ; S. O. Stephenson, 27 ; Victrix, 59 ; Vivid, 94.
Læliocattleyas, culture of, 149.
Lawrence's, Sir T., Orchid paintings, 10, 37.
Leptotes unicolor, 161.
Liparis vitiensis, 23.
Lycaste Locusta, 50.
Lycastes, culture of, 88.
Lyperanthus nigricans, 57.
Lysiella obtusata, 109.

MANCHESTER Orchid Society, 62, 63, 127, 159, 191.
Massachusetts Horticultural Society, 174.
Masdevallia simula, 97.
Microstylis Everardii, 23 ; Imthurnii, 23 ; latisepala, 23 ; longifolia, 23 ; radicicolor, 23.
Miltonia Constance, 59 ; Hyeana, 123 ; H. the Dell var., 123 ; Our Princess, 26 ; Prince Imperial, 25 ; spectabilis, 148 ; Venus var. Fascinator, 96 ; vexillaria Purple Emperor, 30.
Miltonias, culture of, 53, 192.
Mormodes, culture of, 54.

NATIVE New England Orchids, 173.
Nomenclature, 2.

ODONTIODA Alcibiades, 123 ; Cardinalis, 95 ; Cilleham var. Ada Evans, 121 ; Colinge var. Athene, 122 ; Dauntless Orchidhurst var., 30 ; Grenadier, 122 ; G. var. Glow, 25 ; Hypatia, McBean's var., 95 ; Joiceyi splendens, 96 ; Jupiter, Pitt's var., 95 ; Madeline, 121 ; magna rubra, 60 ; Marion Worsley, 24 ; Niobe, Fasey's var., 121 ; Sanderorthii, 136 ; Scarlet Emperor, 123 ; Victory, 26.
Odontocidium Graireanum, 123.
Odontoglossum ardentora, 121 ; Armstrongii, 157, 175 ; Barnaby Rudge, 122 ; Britannia, 96 ; Bullecourt, 122 ; chiriquense, 102 ; Chu Chin Chow, 123 ; crispo-Solon var. Carmincetta, 24 ; c. F. Felton, 96 ; c. F. K. Sander, 72 ; c. Pittianum, 72 ; c. Victor Newton, 25 ; Desdemona, 123 ; Diamond var. Perfection, 96 ; Eugene, 26 ; eximium Memoria L. Crawshay, 128 ; Faustina, 121 ; genus, 32 ; Gloriette, Fasey's var., 122 ; Lady Avice Menzies, 123 ; Pescatorei Sanderæ, 65 ; Radiant, McBean's var, 121 ; Red Admiral, 120 ; Robert Venables, 122 ; Rosina Invincible, 96 ; R. magnificum, 120 ; Rubens var. Mrs. Harold Smith, 122 ; Rufus, 121 ; St. George var. Albion, 25 ; St. G. Ralli's var, 95 ; Trident, 121.
Odontoglossums, culture of, 86.
Odontonia Ceres, 25, 121 ; Dora, 26 ; Maudiæ, 29 ; Melia, 126 ; Sylvia, 59 ; Thais, 189 ; W. R. Fasey, 25, 96.
Oncidium bicallosum, 130 ; ornithorhynchum, 110 ; Papilio Charlesworthii, 1, 25.
Ophrys Cranbrookeana, 85.
Orchid culture in Java, 39.
Orchids of Australia, 57 ; The Cape, 66, 112 ; Eastern Asia, 161 ; Japan, 35, 67 ; Long's Peak, Colorado, 109 ; Mount Kinabulu, 134 ; New Caledonia, 133 ; New England, 173 ; Papua, 51 ; Siam, 128 ; South American Cordilleras, 168.
Orchis cruenta, 164 ; Fuchsii, 133 ; latifolia, 78, 132, 164 ; maculata, 107 ; m. alba, 3, 98 ; prætermissa, 132 ; purpurella, 132, 163.

PACHYSTOMA Thomsoniana, 137.
Paintings, Sir T. Lawrence's, 10, 37.
Paphinia cristata, 78.
Peloria, 3.
Phaius Blumei, 81, 97 ; Clive, 139.
Phalænopsis amabilis formosa, 68.
Phalænopsis, culture of, 54.
Platyclinis, 51 ; glumacea, 123.
Pleione humilis, 111.
Pleiones, culture of, 88.
Pollination of Hæmaria discolor, 140 ; of Orchid flowers, 101.
Position of plants in houses, 152.
Prasophyllums, 57.
Propagating by bulbils, 112.
Pterostylis australis, 99 ; trullifolia, 100.

RENANTHERA Storiei, 68.
Resting Period, 178.
Rœbling Orchid collection, 1.
Rolfe, the late R. A., 5.
Rosslyn collection, 71.
Royal Horticultural Society, 30, 59, 93, 124, 155, 189 ; autumn show, 186.

SANDER, Henry F. C., 45.
Sander's list of hybrids, 153.
Schomburgkia pseudobulbs, 128.
Seed, dispersal of, 40 ; in relation to colony formation in Goodyera pubescens, 105 ; raising, 56.
Serapias gregaria, 129 ; lingua, 129 ; parviflora, 129.
Serapicamptis Forbesii, 82.
Shading Orchids, 92.
Shrewsbury Show, 108.
Sigmatochilus kinabaluensis, 136.
Sobralias, culture of, 87.
Sophrocattleya Dorea, Low's var., 190 ; Sir M. Buller, 4.
Sophrolæliocattleya Falcon, 95 ; Forma, 121 ; Joseph Charlesworth, 95 ; Prince Hirohito, 24.
Sophronitis grandiflora, culture of, 87.
Specific characters, dislocation of, 44.
Spiranthes autumnalis, 140.
Stanhopea tigrina, 69.
Stanhopeas, culture of, 54.
Stauropsis lissochiloides, 68.

THUNIA Marshalliæ, 66.
Thunias, culture of, 16, 119.
Trichosma suavis, 165.

VANDA cœrulea, 19 ; V.c. Bodnant var., 190 ; Marguerite Maron, 9 ; Sanderiana, 79.
Vandas, culture of, 118, 119.
Vuylstekeara Nora, 61.

WATERING, 13.
Wilsonara majalis, 26.
Winter, preparing for, 151.

YORK Gala, 16, 62.

ZYGOCOLAX Veitchii, 34.

LIST OF ILLUSTRATIONS.

Ancistrochilus Thomsonianus, 137.
Bolton, the late Wm., 182.
Cattleya labiata, 141.
Cypripedium insigne Sanderæ, 183.
Cypripedium Maudiæ, 55.
Cypripedium Minos Youngii, 166.
Cypripedium Minos Westfield var., 177.
Cymbidium Huttoni, 43.
Cymbidiums exported to Japan, 103.
Dendrobium Phalænopsis, 145.
Dendrobium superbum, 115.
Gymnadenia conopsea × O. ericetorum, 131.
Gymnadenia conopsea × O. purpurella, 132.
Læliocattleya Bedouin, 15.
Læliocattleya General Maude, 77.
Lycaste Skinneri, 91.
Miltonia Clowesii, 113.
Odontoglossum Armstrongii, 175.
Odontoglossum crispum Pittianum, 72, 73.
Odontoglossum Victory, 64.
Orchid baskets, 91.
Orchis purpurella, 163.
Phaius Clive, 132.
Pitt, H. T., 71.
Pterostylis australis, 99.
Rolfe, the late R. A., 5.
Sander, the late H. F. C., 45.
Vanda cœrulea, 19, 20.
Vanda Roxburghii, 90.
Vanda Sanderiana, 79.

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